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Washington Highlights

The latest chapter in the consequential tideland case was approval by the Supreme Court of a decree proposed by Attorney General Tom C. Clark holding that the United States Government has paramount rights over submerged lands off the California coast.

This action followed the court's decision last June 23, awarding the lands in question to the Federal Government.

At the same time, the court voided a stipulation between the Federal Government and California which would have authorized state leases to continue and permit development of normal drilling operations in the tidelands. Also ruled against by the tribunal was another stipulation under which the United States disclaimed rights to certain lands lying under bays and harbors on the California shoreline.

Discussing the high court's decrees on the tideland case, Attorney General Clark defended the leasing stipulation which he and Interior Secretary Krug entered into with California. He said that the pact was designed to protect the Government's oil in the California tidelands and "show good faith" with the state.

Clark regarded with favor the statement made by Solicitor General Philip B. Perlman, that the stipulations continue in full force and effect, notwithstanding the decision of the judiciary holding them inapplicable to the case before it.

Press advices received here told of a tidelands resolution approved at the recent national convention of the National Reclamations Association in Phoenix, Ariz.

The resolution called for "Congressional action to return to the states control of tidelands handed over to the Federal Government by a widely criticized Supreme Court decision against California brought in this year."

Signs are growing that the Navy is about to propose the temporary addition of 7000 acres of land to its vast Petroleum Reserve at Elk Hills, 40 miles west of Bakersfield in California.

The understanding here is that the Interior Department has been asked by the Navy to expand the present boundaries of the reserve for prospecting purposes. This added ground would include 2480 acres of public domain and 4320 acres owned by Standard of California.

Geologists and oil production men generally agree that Elk Hills oil possibly extends beyond the present reserve limits of the field. The Navy evidently is desirous of having an extension of the reserve for a period of four years while exploration is conducted.

Elk Hills Reserve, the Navy's largest, at present embraces 40,000 acres. Standard of California in the war years drilled 600 wells for the Navy for a combined yield of 70,000 barrels of oil daily. Since peace was declared all but 100 of these wells have been shut down. The wells still on production account for approximately 8000 barrels a day.

The belief is held in Washington that it's only a matter of time until the whole Elk Hills area is resurveyed, with Congressional approval sought for new Reserve boundaries.

Interior Secretary Krug, who suffered a fainting spell while addressing the National Reclamation Association's annual convention at Phoenix, Ariz., has been advised by his physician to rest for several weeks. Krug's illness is attributed to overwork. He will observe his 40th birthday this month.

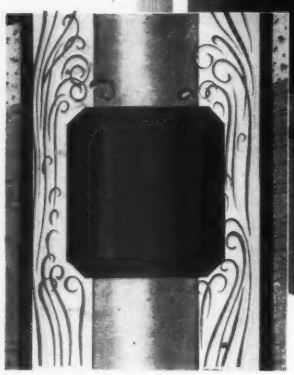
Walter S. Hallanan, chairman of the National Petroleum Council, has appointed a committee on analyzation of the report of the 16 nations. This committee was authorized at the meeting of the Council on October 9, upon recommendation of the agenda committee.

Its chief duties will be to analyze the report of the 16 nations submitted under the Marshall plan, with respect to petroleum, petroleum products and oil equipment.

Californians named to the committee are W. F. Humphrey, Tide Water Associated Oil Co., and A. C. (Bert) Mattei, Honolulu Oil Corp., San Francisco.

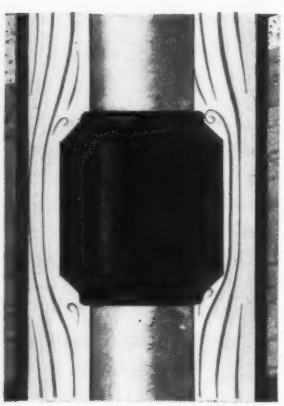
Approximately $94,000,000 in state highway user taxes were diverted to non-highway purposes during 1946, according to a report of the Public Roads Administration. In fact, non-highway use of highway user tax income was even greater by $36,399,000.

Why this Special Rubber Lip saves your drill pipe



Exclusive Lip feature on Patterson-Ballagh Protectors prevents dangerous "Ringing" of drill pipe.

Have you noticed there is seldom "ringing" of drill pipe above the modern Patterson-Ballagh Lipped Protector? You will remember the first Protectors were flat on the ends and around the end was often seen a ring of fresh rust eating into the metal to weaken it.



Several years ago Patterson-Ballagh engineers looked into this "ringing" of drill pipe. They found modern slush pumps circulating mud 300 feet per minute or faster. Mud velocities at points between casing and tool joints or protectors was often 10 to 20 times normal. Here, the flat ends of the protectors caused most turbulent swirling. Fine abrasive particles whirled in the swirls like tiny grindstones to scour off rust around the protector end, leaving a ring of clean metal ready to rust again. This happened over and over, eating deeper and deeper.

Already having a perfect abrasion resisting PBX Special Rubber in their Protector, Patterson-Ballagh engineers redesigned *the shape*. They streamlined it to reduce turbulent swirling. They added lips to deflect solid particles away from the metal and shield it completely at points where "ringing" could occur. That is why you find little ringing of this kind when you use Patterson-Ballagh Casing Protectors. Lips also prevent ringing due to cavitation and to corrosion by alkali muds when pipe is standing in the derrick. This means *fully protected pipe as well as casing*. It will pay you to see your Patterson-Ballagh man and protect your drill string 100% now.

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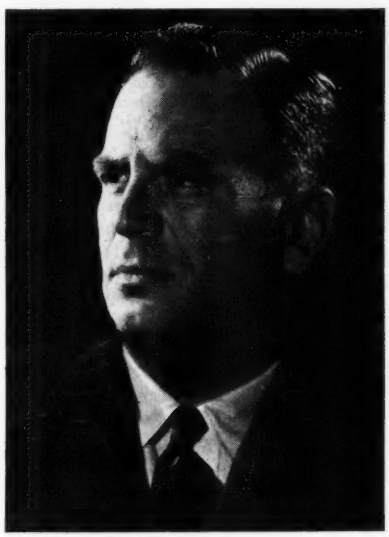
A Whole City Profits by Ingenious Engineering

When the development for oil of the downtown area of a large city is accomplished without the placement of a single oil well or tank farm in the area it becomes a matter of considerable importance to the oil industry. Such a development is taking place under Long Beach, California, a city of 300,000 people.

Perhaps keeping in mind that when oil was discovered under Oklahoma City a large part of the city was soon overrun with derricks, pumping units, gas traps, tankage, heavy trucking, noise and all the other things that go to make an oil field on a 24-hour basis, the people of Long Beach passed an ordinance prohibiting drilling in the highly developed downtown section. A very few years thereafter, it was found that this section overlay an oil field of vast economic importance. To carry out the development for this oil without defacement of the city was a legal necessity. And it further necessitated a myriad of ingenious new developments in almost every phase of the oil producing business. It required a means of grouping wells closely together at the surface, it required development of entirely new technique in directional drilling both from the standpoint of extremely high angles and that of close directional control, it required a new community leasing idea both as to size of community lease and intensiveness of leasing, and it required both legal and political relief from oppressive laws.

Such a task was undertaken and has been brought to fulfillment by the Continental Southern Corporation and Continental Northern Corporation, by the ingenuity, farsightedness, skill and persistence of their president, Robert V. New.

These two companies found themselves with a strip of land on the west bank of the Los Angeles River 6,200′ long and 27′ wide upon which to place the wells. On the river side of the 27′ strip was filled 14′ for a truck road. Upon the 27′ was first constructed a series of reinforced concrete well foundations. The foundations consisted of cellars 8′ deep, 4′ wide and 16′ long with a 1′ thick wall between each cellar. Upon the concrete mat were laid 4 rails and a heavily constructed substructure and set upon the rails on manganese steel rollers. Derrick is mounted on substructure, as is all drilling equipment, pumps, etc. The substructure is secured by turn buckles to tie downs set in the foundation. The well is drilled to completion, and upon completion, steam and water lines are disconnected and the turn buckles loosed. The derrick is pulled to the next location, a distance of 18′, by two trucks using winch lines strung over "A" frames, the drill pipe, drill collars, traveling blocks, etc., do not have to be laid down but are left standing in the derrick. The substructure derrick and equipment, all weighing over 300 tons, is moved as a unit. Breaking loose, moving and rigging up from one well to the next location is usually completed in less than 10 hours and actual moving of the rig is done in about 8 minutes.



Robert V. New

He Founded the Companies That Pioneered the Development

The next step was to set up 4 community leases under the city of about 160 acres each, and each containing about 1500 separate lots. When this leasing was well under way, two problems presented themselves. First, some legalist in Long Beach decided that as the city was zoned against drilling the zoning ordinance would also prohibit subsurface drilling even at considerable depth. Injunction proceedings were filed against the city of Long Beach and the court held that such subsurface drilling could not "endanger the peace, health and safety" of the citizenry. Injunction was issued and work was ready to begin, and then the matter of the State Oil Well Spacing Act was found to be at variance with the 18′ well center program. Robert New then wrote what is now Section 3606 of the Oil Well Spacing Act and presented it to the State Legislature, which promptly saw the benefits of recovering oil from under developed areas by this method, and passed the bill as an emergency measure. It was immediately signed by Governor Warren and became law. Section 3606 reads as follows:

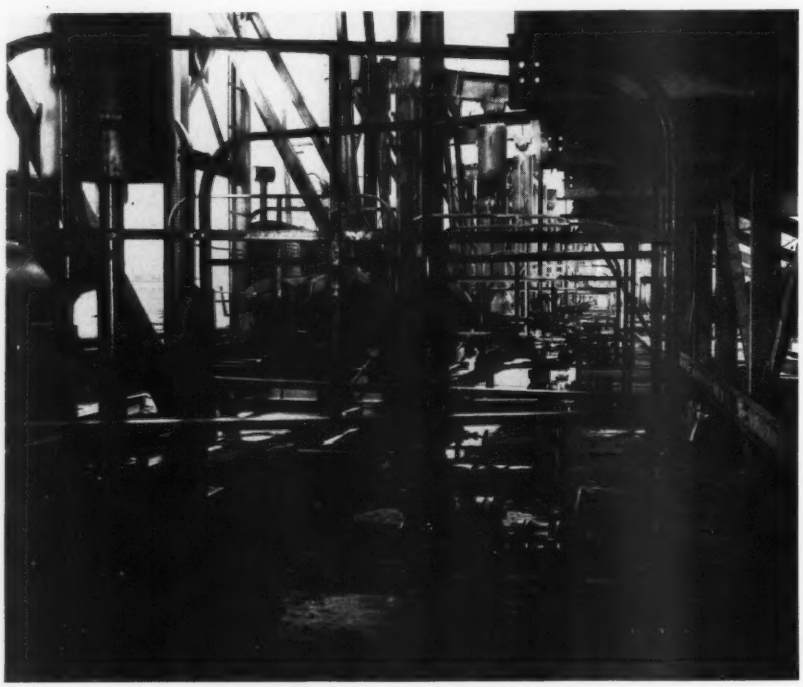
> 3606. Notwithstanding any other provisions of this chapter, where a parcel of land contains one acre or more and where all or substantially all of the surface of such parcel of land is unavailable for the surface location of oil or gas wells, there may be drilled or produced not more than one well into each acre of such parcel of land, and the surface location of such well may be located upon property which may or may not contain one acre or more of surface area, and the property upon the surface of which the surface location of such well may be located may or may not be contiguous to such parcel of land; provided:
>
> 1. No operator shall construct or maintain any derrick within 150 feet of any other derrick, then standing, of such operator.
>
> 2. The surface location of such well, as measured from the center of the hole, shall be not less than 25 feet from an outer boundary of the surface of the property upon which such well is located, and shall be not less

View of a long line of close-up producing wells. Note at right hand of photograph corner of derrick drilling next well in line. Pipe rack shows in back of first two wells on right.

than 25 feet from any dedicated public street, road or highway which is so dedicated and in such public use at the time of the commencement of drilling of such well.

3. The producing interval of such well shall be not less than 75 feet from an outer boundary of the parcel of land into which such producing interval is drilled, and the producing interval of such well shall be not less than 150 feet, as measured horizontally in the same zone, from the producing interval of any other well which is producing or capable of producing oil or gas.

To enforce the provisions of this section, the supervisor may require, at the time supervisor gives approval of notice of intention to drill, redrill or deepen, that a subsurface directional survey be made for such well, and that a plat of said directional survey be filed with the supervisor within fifteen (15) days of completion, and such plat shall be open to inspection by any other operator in the field in which the well is located.



This is the pay-off. Row of 17 close-up wells taken from well-head level. Note portable steel pipe rack at right for next drilling well.

After the leasing was nearly completed, and a number of wells had been drilled under properties already leased, it was determined that the leasing of 100% of the properties within the outer bounderies of the Community Lease was highly desirable, and again resort was had to assistance from the Legislature. This time, New wrote a bill which is now Section 3608 of the Oil Well Spacing Act, and presented it to the Legislature. Not only did this bill aid in the development of this necessary program, but served to plug the hole left in the Spacing Act by the recent decision of Bernstein vs Bush. In this case the Supreme Court of the State of California declared certain sections of the Spacing Act unconstitutional, and went further to state that in order to make them constitutional the State would necessarily have to adopt an ordinance like the city of Oxford, Kansas, which ordinance was adjudgicated in the case of Marrs vs. the City of Oxford. New followed the Oxford ordinance and the Legislature promptly passed this bill and added to it an emergency clause. Thereafter the bill was signed by Governor Warren and became law. Section 3608 reads as follows:

3608. Where land aggregating less than one acre is surrounded by other lands, which other lands are subject to an oil and gas lease aggregating one acre or more, and if, under the provisions of Sections 3600 to 3607, inclusive, of the Public Resources Code, the drilling or producing of a well on said land is declared to be a public nuisance, said land shall, for oil and gas development purposes and to prevent waste and to protect the oil and gas rights of landowners, be deemed included in said oil and gas leasehold on said other lands when there is filed with the State Oil and Gas Supervisor a notice of intention

to drill a well upon the said leasehold covering said other lands and the State Oil and Gas Supervisor has caused to be recorded with the county recorder of the county in which said land aggregating less than one acre is located a declaration as hereinafter provided.

There shall be attached to such notice of intention a statement which shall set forth the name or names of the record owner or record owners of said land aggregating less than one acre which is to be included in said oil and gas leasehold on said other lands, the legal description of said land aggregating less than one acre, name of the lessee of the oil and gas lease in which such land is to be included, and a reference to the book and page of the official records of the county recorder where such oil and gas lease is recorded or a reference to the document number and date of recordation of such oil and gas lease. The State Oil and Gas Supervisor, upon receipt of such notice of intention and attached statement shall, within 10 days thereafter cause to be recorded with the county recorder of the county in which said land aggregating less than one acre is located, a declaration, signed by him or his assistant or deputy, that said land is deemed by the provisions of this section to be included in said oil and gas leasehold on said other lands. Such declaration shall set forth the same information required to be set forth in the statement attached to the notice of intention. The county recorder shall accept such declaration for recordation and shall index such declaration in the names of all persons or corporations mentioned therein. From the time of recording thereof in the office of the county recorder such notice shall impart constructive notice of the contents thereof to all persons dealing with the land therein described.

The owners of the oil and gas mineral rights in said land so deemed included in said oil and gas leasehold on said other lands, as herein provided, shall thereafter receive in money, based upon the production of oil and gas from said leasehold including said land, a pro rata share of the landowners' royalty determined in accordance with the provisions of said oil and gas lease in the proportion that the area of said land bears to the aggregate of the total area covered by said oil and gas lease including the area of said land; provided further, that said owners of said oil and gas mineral rights in said land shall in no case receive less than their pro rata share determined, as herein provided, of the value of one-eighth part of the oil and gas produced, saved and sold from the operating unit comprising said leasehold on said other lands and said land, computed in accordance with the provisions of said oil and gas lease with respect to the computation of landowners' royalty; and provided further, that without the consent of said owners of said land the lessee or operator of said oil and gas leasehold shall have no right to use the surface of said land nor to use the subsurface thereof down to a depth of 200 feet below the surface thereof.

Where said land aggregating less than one acre is surrounded by lands which are not subject to a single oil and gas leasehold but is surrounded by lands which are subject to two or more separate oil and gas leaseholds, one or more of which oil or gas leaseholds aggregates one acre or more, then in such event the said land aggregating less than one acre shall, as herein provided, be included within and be joined to that oil and gas leasehold aggregating one acre or more as to which said parcel of land aggregating less than one acre has the longest common boundary.

In determining the contiguity of any parcels of land for the purposes hereof, no road, street or alley shall be deemed to interrupt such contiguity.

It should be noted that twice New has gone to the Legislature for relief from oppressive and unnecessary legalistic red tape and both bills have come through the Assembly and Senate without a dissenting vote and been signed by the Governor.

24" conductor pipe is driven to a depth of 60'. An average of 250' of 13⅜" casing is cemented in 17" hole. 2100' of 13-⅜" T. & C. casing was set in Continental Southern Corporation's #113. This string was landed in 18-⅝" hole with no difficulties being encountered. This is a record case of landing large casing in a 60° angle hole. This procedure is invaluable in long holes to avoid key-seating the drill pipe. The depth of the first deflation tool is determined by preceding or succeeding wells. Some wells must be deflected higher or lower than others.

Deflation tools may be set for direction or angle or both. The amount of required increase in angle is predetermined and must be closely adhered to, in order to reach

Aerial view of Long Beach. The entire land area shown beyond river is under development, including biggest buildings in the city.. All the development is being done from the two derricks (arrows) in foreground.

the casing point at the prescribed depth. The number of deflation tools required for each well will vary with the structural conditions encountered.

The average maximum slope of most of the Continental wells is 60° off the vertical. Entering the Ranger Zone at this high angle, doubles the length of the liner. An average deflection angle of 3° per 100′ is required to attain the 60° slope.

Continental Southern Corporation's Community #116 reached a maximum angle of 68°30′.

The wells are surveyed as drilled by single shot instruments run through the drill pipe. Single shots are taken at 30′ and 60′ stations during the early part of the well. After the well reaches its required angle and course, single shots are taken at 90′ stations. Wire line magnetic surveys are often run as a check against the single shot surveys.

All of the Continental wells are drilled with clay base mud. Condition of the mud is the critical feature in these high angle holes. Constant mud treatment has kept the holes in good condition, considering the number of round trips that have to be made to set deflection tools and change drilling hookups. There have been very few cases of fishing and stuck drill pipe, and they were mostly due to some mechanical failure.

Electric logging has been unusually successful. The credit again goes to good mud conditions, and to the use of sinker bars to carry the electrode and cable down the lower side of the hole.

Showing tankage, line of close-up wells and drilling well on 27′ strip between railroad track and river.

A water string of 8-⅝″ casing is cemented in 12¼″ hole. The weight of the slurry is varied throughout the cementing operation to prevent "channeling". The 8-⅝″ string is worked as long as possible during the cementing operation.

The float shoe is drilled out 24 hours later, and a water shut-off is obtained.

7-⅝″ hole is drilled through the Ranger Zone, and then underreamed to 9-¼″. Low water loss mud is used to drill the zone. The producing string is 5-½″ casing, perforated 80 mesh, and prepacked to 7″ O.D. with 4-6 gravel. 4-6 gravel is .185″—.131″ in diameter as measured with a Tyler mesh screen.

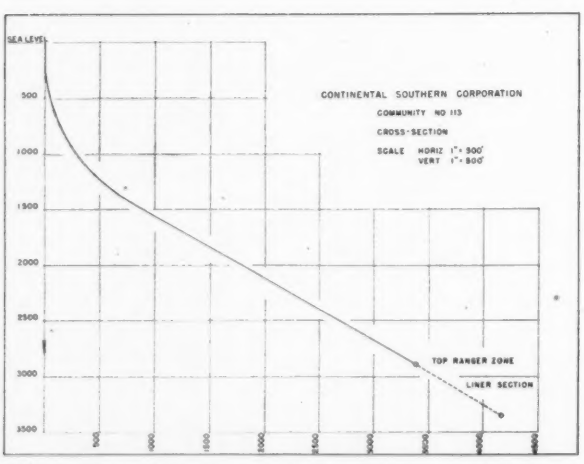
The liner is worked, scratched, and washed with salt water. The majority of the Continental wells have used 2-½″ tubing. A few strings of 3″ have been used.

The tubing is secured at the bottom with a tension tubing anchor. The wells are swabbed to a low cut.

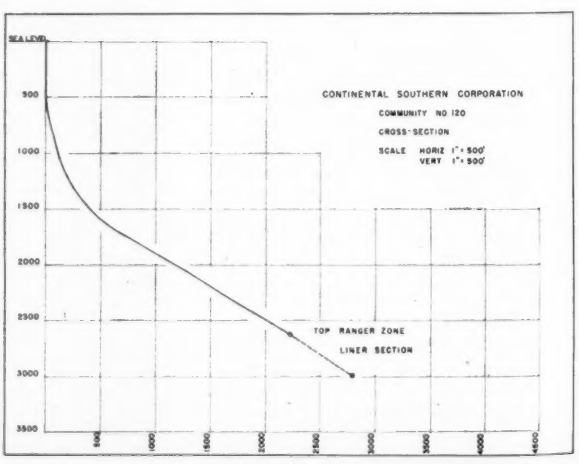
The Continental wells are all being pumped with air balance pumping units using ¾″ and ⅞″ sucker rods, and pumps having plunger sizes of 2″ or 1-¾″. The pumping units are operated on dry gas.

All wells are pumped from the top of the liner. Fluid levels are taken regularly. The wells are

(Continued on Page 32)



Cross section of highest angle directional hole ever drilled and successfully completed. Note horizontal drift of 4,250′ in vertical depth of 3,400′



Cross section view of well at 60° 45″ angle drilled and completed with clean oil to tanks in less than 18 days. First 1,700′ of well was kept in 5′ radius cylinder.

Significance of Fuel Sensitivity in the Performance of Motor Gasolines

By E. J. McLAUGHLIN
and J. A. MILLER
California Research Corporation
Richmond, California

The term fuel sensitivity is one which is generally used to define the change in the antiknock value of a gasoline as a function of the severity of the operating conditions used. For example, a comparison of the change in octane number of several fuels in a given engine as the inlet air temperature is varied would be one means of determining the sensitivity of the fuels. Any operating variable, such as engine speed, compression ratio, or spark advance could be used, either independently or combined, to vary the severity of the test method. The operating variables used to change severity are usually those which most nearly duplicate the service conditions related to the problem being studied.

Applying the term fuel sensitivity to motor gasolines, a variety of techniques can, and in some instances are, employed to determine how the fuel performance changes with a change in severity of one or more operating conditions. However, the fuel sensitivity of motor gasolines is usually evaluated by two well-known test methods, the F-1 or research method and the F-2 or motor method. These methods are basically similar (both conducted in a single cylinder CFR engine) and consist of bracketing, at a constant knock intensity, the unknown test sample with reference blends of a given octane number, thereby permitting interpolation which enables the operator to assign an octane number to the unknown fuel. However, the operating conditions used for the two tests differ considerably, the most significant conditions for each of the methods being shown in the following table.

Condition	Test Method F-1 (Research Method)	F-2 (Motor Method)
Inlet Air Temp., °F.	125	75-125
Mixture, Temp., °F.		300
Spark Advance, °BTDC	13	Variable — 19 to 26
Engine Speed, rpm	600	900

As can be seen by the above comparison, most of the operating conditions are less severe for the F-1 method than they are for the F-2 method. Thus the F-1 method almost invariably permits a somewhat higher compression pressure and power output than the F-2 method for a given degree of knock on any one fuel. However, since the test fuels are always compared with reference fuels and evaluated in terms of octane number, it is not the absolute change in power output or performance which is considered, but rather the change relative to the standard reference fuels. Thus, a fuel which changes in antiknock performance to the same degree as the reference fuels will have the same rating or octane number as the reference fuels and is considered to have zero sensitivity. On the other hand, a stock which is more sensitive to test severity than the reference fuels will have an appreciably higher rating or octane number under the milder or F-1 test conditions than it will under the more severe F-2 conditions. In motor fuel test terminology, it is the generally accepted practice to denote the sensitivity of any fuel by the amount that its octane number is changed by the F-1 and F-2 test methods, or mathematically, sensitivity of a motor gasoline is equal to the difference between the F-1 and F-2 octane numbers of the fuel.

For those not familiar with this system of evaluating fuel sensitivity, an indication of typical sensitivities for several basic stock types may be of interest. Straight run highly paraffinic gasolines, because of their similarity to the reference fuels, usually have a difference in rating by the two test methods of zero to two octane numbers and are therefore considered to have low sensitivity. In the case of cracked or reformed gasolines, the sensitivity is normally a function of that percentage of unsaturated materials present, the more highly cracked stocks having fuel sensitivities as high as 10 or 12 octane numbers. Stock containing appreciable concentration of aromatics also usually have reasonably high sensitivities, the exact magnitude depending upon the amount and type of aromatic present.

Importance of Fuel Sensitivity to Road Performance

Most of the motoring public has been taught that knocking can be prevented by using a fuel of the required octane number, or if knocking does occur it can be eliminated by a fuel with a rating higher than that normally used. Recent research has indicated that within certain limits the same can usually be said of fuel sensitivity; i.e., knocking can, in many instances, be eliminated by a more sensitive fuel of the same F-2 octane number. This conclusion is the result of road tests conducted to determine why fuels of the same F-2 octane number did not provide the same degree of freedom from knock. It was found that if the test fuels had the same F-1 rating as well as an equivalent F-2 rating their road performances were usually equal. Furthermore, it was found that the sensitive fuels performed best at low speeds and the insensitive fuels best at high speeds. For most vehicles in proper mechanical condition and with a normal amount of combustion chamber deposits, the F-1 rating of the fuel will usually be close to the road rating or road

octane number obtained when the car is operated under full throttle conditions at speeds of 20 to 25 miles per hour. Conversely, the road octane number of any test fuel will usually approach the F-2 rating of the fuel under full throttle conditions at engine and road speeds of 60 to 65 miles per hour. Figure 1 shows road octane number as a function of car speed for four fuels of different sensitivities, all of them having an F-2 octane number of 74. The zero sensitivity fuel; i.e., the one which is 74 by both of the laboratory test methods shows the same road octane number at all speeds. The other three fuels, having laboratory sensitivities or differences between F-1 and F-2 ratings of 4, 8 and 12 octane numbers, respectively, provide successively higher road octane numbers in the low speed range and all have the same road rating of 74 octane (which is the same as the F-2 rating of the fuel) at approximately 58 miles per hour. Also, it may be noted that at 30 miles per hour the road rating of all of the fuels is within one or two octane numbers of the F-1 laboratory rating.

It is frequently difficult to obtain a clear concept of the effect of fuel sensitivity on road performance based on a comparison of road octane numbers because road octane numbers do not show the absolute effect of fuel composition on the knocking tendency of the engine-fuel combination; but rather they show the effect of the fuel composition on the tendency to knock relative to the knocking tendency of some reference stock. It may therefore be of interest to study a set of curves actually obtained on the road with a test car showing the variation in the amount of knock obtained with fuels of different sensitivities as the car is being accelerated on the level road. Figure 2 is a chart showing the variation in knock intensity of three zero sensitivity reference fuels (68, 70 and 72 octane numbers) and one 70 octane commercial type fuel having a sensitivity of 7 octane numbers as a function of car speed. This chart clearly demonstrates the marked low speed superiority of a sensitive fuel.

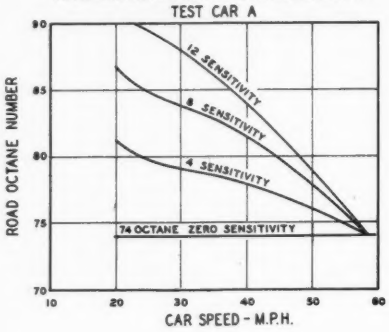
The road antiknock value of a fuel could be measured by obtaining

FIG. 1

EFFECT OF SENSITIVITY ON ROAD OCTANE NUMBER

74 F2 OCTANE NUMBER 0,4,8,12 SENSITIVITY

TEST CAR A



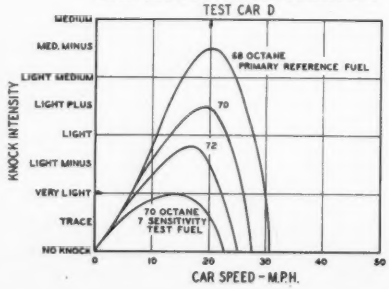
curves of audible knock as a function of car speed, but most trained observers prefer to use the "Borderline" type of test for determining road octane numbers because greater precision can usually be obtained. This greater precision results from the fact that with the "Borderline" test the observer records the speed at which the knock commences and the speed at which it dies out with a fixed spark setting which is considerably easier to do than to attempt to estimate the intensity of the audible knock at certain specified speeds while a car is accelerating along a level road or climbing a hill. However, the same type of data may be obtained from either of the two methods and the "Borderline" test procedure is mentioned here only because it is the technique generally used in road testing. Using the "Borderline" technique has no major effect on the road octane numbers obtained or the conclusions which may be drawn from such road octane numbers.

FIG. 2

VARIATION IN KNOCK INTENSITY WITH OCTANE NUMBER & SENSITIVITY

LEVEL ROAD FULL THROTTLE ACCELERATION

TEST CAR D



Comparison of Fuel Performance in Different Makes of Cars

Establishing the road performance of several fuels is a very difficult procedure because of the great variation between different cars, even those of the same make and year model. Figure 3 shows the road octane ratings of four fuels having the same F-2 rating and sensitivities of 0, 4, 8 and 12 octane numbers, respectively, as obtained in three different makes of test cars. On this chart the results from the car which shows the greatest response to sensitivity are presented at the top, the next most responsive are shown in the middle and the vehicle showing the least improvement with sensitivity are shown at the bottom. It may be noted that even the third test car which showed the least response to sensitive fuels still gave markedly improved octane number at low speeds as compared to the zero sensitivity test fuel.

Relative Importance of Knock-Free Performance in the High and Low Speed Range

It is the mutual desire of the car manufacturer and the fuel refiner to supply an engine-fuel combination which will provide essentially knock-free operation at all speeds and loads. Ideally, optimum efficiency in this regard would be achieved if a fuel was just satisfactory (i.e., gave incipient knock) under all full throttle operating conditions. Unfortunately, this cannot be achieved because of the very wide variation in the fuel requirements of different vehicles. Furthermore, a great sacrifice in the quality or quantity of fuel would have to be made if the refiners attempted to market a gasoline which would completely satisfy the most critical engines under their most severe operating conditions. Therefore, the best compromise appears to be to match the sensitivity of the fuel to the sensitivity requirements of the average vehicle. This means that certain cars which have an abnormally high low speed octane requirement will encounter low speed knock and conversely, those having an unusually high high speed octane requirement will encounter detonation at high speeds. The fact that all operators operate

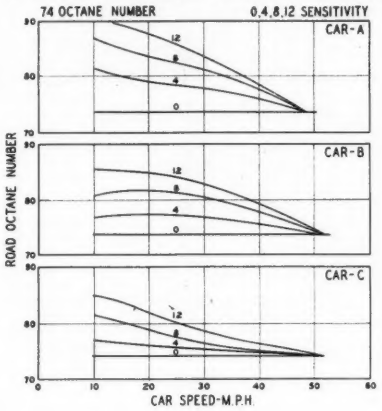
their engines at full throttle at low speeds much more frequently than they do at high speeds, and the fact that the windage at high speeds is so great that a reasonable degree of detonation cannot be detected results in careful consideration being given to meeting the low speed requirement.

Effect of Engine Design and Adjustment on Fuel Requirement

The engine designer has to make many compromises in developing an engine which will be satisfactory from all standpoints. Many of these compromises have a very direct bearing on the octane requirement of the engine. Some of the features which affect the final octane requirement are obvious, such as the compression ratio and the amount of mixture heating provided in the intake manifold to insure satisfactory operation at low temperatures. Thus the volatility of the fuel to be used in the engine is an important factor in determining the amount of power which an engine of a given size can develop; because, generally speaking, the more volatile the fuel, the less is the heating that must be supplied to the mixture and the greater is the amount of air and fuel which the engine efficiently consumes. In addition to the quite apparent design factors which affect octane requirement there are other more obscure features which have a marked influence on the tendency of an engine to knock. A great deal of time is spent in developing the most satisfactory combustion chamber design to minimize the need for high octane fuels and special attention is given to any effects of combustion chamber design on the formation of carbon deposits. Most commercial engines require gasolines having antiknock values 5 to 15 octane numbers higher when they have accumulated their normal or equilibrium combustion chamber deposits than they do with clean combustion chambers. Therefore, increased attention is being given to designing the combustion chamber so that the engine has the minimum octane requirement after deposit accumulation rather than the minimum octane requirement when clean.

Another engine design feature which merits special consideration

FIG. 3
COMPARISON OF EFFECT OF SENSIVITY ON ROAD OCTANE NUMBER IN DIFFERENT TEST CARS



from octane requirement standpoint is the effect of the residual charge in promoting detonation. It is almost impossible to purge a combustion chamber completely of combustion products during the exhaust stroke, and the portion of the burned charge that remains in the chamber may have a tendency to poison the incoming charge and increase the possibility of knock. For this reason, all of the factors which affect engine breathing have an influence on octane requirement. Careful consideration must be given to the cam profile selected, the design of the intake and exhaust ports and manifolds and to the exhaust system; i.e., the amount of back pressure which the exhaust line and muffler develop at high engine speeds when the greatest amount of exhaust products must be handled. It is quite possible that high sensitivity fuels would perform much more satisfactorily at high speeds if the exhaust systems of of some of the cars were enlarged or altered so that lower back pressures would exist in the exhaust manifolds and less residual charge would remain in the combustion chamber to promote knocking during the next firing cycle.

Although most of the factors determining the octane requirements of an engine are determined by the engine designer there are a few adjustments available to the serviceman which will influence the fuel requirement of vehicles. For example, the knocking tendency of a high octane requirement vehicle may usually be lowered by enriching the mixture supplied by the carburetor under the conditions where knock is normally encountered; i.e., at full throttle. This adjustment is usually of limited value, however, because of possible adverse effects upon engine performance.

Another engine adjustment which has a far greater effect on octane requirement is the basic spark timing. Many servicemen leave the motorist with the impression that the spark advance adjustment is a device provided by the manufacturer for the sole purpose of adjusting the octane requirement of an engine so that knock will never be encountered on the road. While it is true that in most engines the octane requirement can be varied over a wide range by changing the spark timing, such changes result in other penalties which are frequently not recognized.

Figure 4 indicates how the power output and the octane requirement of the average passenger car is affected by retarding the spark timing from that required for maximum power under full throttle conditions. It may be noted that an almost linear reduction in octane requirement results from retarding timing whereas the reduction in spark advance has a very non-linear effect on the power output with successive spark retard increments producing progressively larger per cents of power loss. Most car manufacturers take advantage of the flat power output-spark relationship near maximum power spark timing and specify a spark advance which is about 5° retarded (indicated by the broken line on Figure 4) from the spark advance required for optimum power output. This selection of a slightly retarded spark timing results, as indicated in Figure 4, in a slight loss of power (1 to 2%) and a decrease in octane requirement of approximately 5 octane numbers. However, an additional 5° retard in spark timing (total of 10°) results in a 4% loss of power even though the octane requirement has been reduced approximately 13 octane numbers. Additional 5° increments of spark retard decreases the power further (8 and 15%, respectively) from that obtained with the maximum power spark advance. In addition to the

loss in power, a decrease in economy under part throttle operation is effected by retarding the spark timing beyond that specified by the engine manufacturer. Road test data have indicated that a spark retarded 5° from the maximum economy spark advance will result in a loss of economy of approximately 2% under level road operation where maximum economy is most desirable.

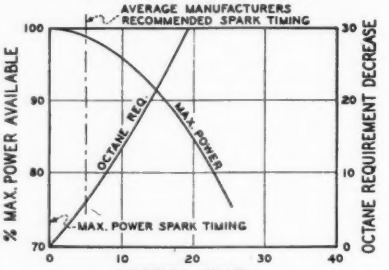
Some motorists can detect, in cars which they are driving regularly, power losses as small as 1%, but past tests with driver covering a range of age and experience have indicated that the average motorist can consistently notice a loss in power when it exceeds 2%. It would therefore appear that retarding the spark to lower the octane requirement by more than 5° (from the manufacturers' recommended timing) would produce a power loss in the average car of sufficient magnitude to be readily apparent to the average driver. There are some exceptions to this conclusion as the test previously referred to indicated that some drivers had to have power losses as high as 4 or 5% before they could consistently detect them but a change of this magnitude is excessive for the average motorist.

As discussed above, retarding spark timing lowers the overall octane requirement of the car. However, the available data indicate that the sensitivity requirement of a vehicle is substantially unaffected by changes in spark timing. It therefore appears that retarding the spark to offset the lack of antiknock quality simply lowers the overall octane requirement of the car with some penalty of power output and economy, the magnitude of which depends upon the amount that the spark timing is retarded.

The question which logically arises when considering retarding spark timing is the effect which this change may have on overall mechanical condition, operating life, and formation of combustion chamber deposits. As far as we know, there is not available sufficient data to determine accurately what degree of spark timing can be tolerated without adversely affecting general engine conditions, but based on general observations of the condition

FIG. 4

AVERAGE EFFECT OF SPARK TIMING ON OCTANE REQUIREMENT & POWER OUTPUT FOR 24 PASSENGER CARS



of engine in service, it appears that a moderate degree of spark retard (up to perhaps 5° beyond the manufacturer's setting) will not result in a marked increase in engine deterioration or deposit formation. However, an excessively retarded spark will produce, in addition to the very appreciable power and economy loss previously discussed, an increase in combustion chamber deposits and, at least in the case of some engines, tends to shorten exhaust valve life due to overheating caused by late combustion.

Problems Connected with Matching the Sensitivity Characteristics of Commercial Fuels to Service Engines

As previously indicated, cars vary widely in both absolute octane requirement and in sensitivity requirement. It is, therefore, impossible to supply any one fuel which would just satisfy the requirements of all vehicles because, cars having a high low speed octane requirement will knock on low sensitivity fuels and vehicles having a high speed high octane requirement will encounter knocking at high speed, full throttle operating conditions. It is, therefore, necessary for the individual fuel manufacturer to determine on the basis of the best available statistical data what octane level is required to serve best his marketing territory. The preparation of proper fuel specifications are usually further complicated by refining factors such as stock availability and by other performance features, such as matching volatility to the changing climatic requirements of each portion of the territory in which the gasoline is to be used. Almost invariably, when a blend of stocks is made to produce a fuel of either a different octane number or sensitivity there is an accompanying change in some of the other significant properties of the fuel such as volatility, heating value, lead susceptibility, sulfur content, etc. In this connection it may be pointed out that natural gasoline is an indispensable blending stock because of its volatility which provides the refiner with the means of controlling the starting and warm-up characteristics of the final fuel. Its generally high octane level and good lead susceptibility are additional factors in its favor which permit its use in relatively high concentrations when required.

Summary

The items of major importance covered in this report may be summarized as follows:

1. There is an optimum sensitivity for each vehicle which will provide a uniform degree of freedom from knocking or a constant knock intensity under most full throttle operating conditions if the fuel octane number is too low.

2. Use of fuels having sensitivities appreciably different from that required by a given engine will result in knock under certain combinations of speed and load at full throttle or will result in an excessive antiknock margin under certain operating conditions if the car is adjusted for knock-free operation on the fuel of the wrong sensitivity.

3. Lowering the octane requirement of the car by retarding the spark will result in appreciable penalties in the form of lost power and economy, accelerated deposit build-up and overheating of the engine if the degree of retard from the manufacturer's setting exceeds several degrees.

Superior Combines Turbo-Supercharging and Dual-Fuel Operations

Two independent developments in the design of diesel engines have widened the application of the diesel in drilling oil wells. Combined in one engine recently by The National Supply Company, Superior Engine Division, for the first time in drilling engines, both turbo-super-charging and dual-fuel operation have now been applied successfully in well drilling.

Dual-fuel engines, a number of which have been operated in Texas and Wyoming permit a long needed flexibility of engine operation on either oil or gas. These engines are convertible from one fuel to the other by the movement of a single lever while the engine is running. Their use avoids the common practices of (1) stocking two engines for the same service or (2) of moving and storing conversion accessories, which require considerable time and labor to convert a diesel engine to a spark-ignition gas engine or the reverse, when fuel conditions require.

An important advantage of this dual-fuel engine design is that the necessary accessories can be added at any time to Superior diesels already in service. They add about 10 percent to the cost of new engines and negligible weight.

Supercharging increases the power output of a diesel engine as much as 60 percent or more with only about 15 percent increase in weight. The weight per horsepower is reduced about 40 percent. Trends toward greater depths of oil and gas wells, more powerful drilling rigs and other factors increase the need for minimum weight of drilling engines.

Field tests of a turbo-supercharged, dual-fuel engine drilling in a California oil field demonstrated the flexibility and fast getaway of the engine under actual drilling conditions. The engine responded quickly to the throttle with either heavy load or empty blocks, the turbo-charger introducing no lag in rig performance. Anticipated fuel economies of dual-fuel operation were shown, exceeding at full load the well known high efficiency of the straight diesel engine.

Supercharging increased engine power with only slight increase in cylinder pressure and negligible increases in crankshaft and connecting rod bearing pressures. This is because higher average pressure is maintained during the power stroke. Little more cooling capacity is required because considerable heat is dissipated by the scavenging air.

Superior engines are supercharged by the Elliott-Buchi turbocharger, which consists of a gas turbine operated by engine exhaust gas on its way to the atmosphere and has no connection with the engine crankshaft. A blower on the same shaft with the turbine supplies scavenging and combustion air to engine cylinders at a pressure greater than that of the atmosphere. Speed and output of the turbocharger vary automatically with engine speed and load, or both, making control equipment unnecessary.

Engine Development

The principle and application of dual-fuel operation is new only to the rotary drilling of oil wells. In Dr. Diesel's original patents the burning of liquid, gaseous and even solid fuels on the more efficient high compression cycle was considered. The dual-fuel engine was developed in Europe several years ago when liquid fuels became scarce and combustible by-product gases were available. Variable availability and fluctuating prices of fuels have influenced the development of dual-fuel engines in the United States. National Supply Company, recognizing the value of this flexibility in its drilling engines, as well as in other service, devoted a considerable research program to developing its own individual fuel systems.

It has been demonstrated that gas alone does not ignite regularly at the compression pressures and corresponding ignition temperatures in conventional diesel engines. Consequently in gas operation it is necessary to burn also a small proportion of oil as a pilot fuel for igniting the gas.

A fixed quantity of pilot oil, equivalent to 10 to 15 percent of the full load oil consumption, must be used under the conditions of intermittent operation of drilling engines, although lesser amounts can be used under laboratory conditions of operation. The actual ratio of gas to oil varies with engine load. Thus gas consumption may vary from a few percent at idling loads to about 87 percent of the total fuel at full load.

The problem of introducing gaseous fuel into a supercharged dual-fuel engine, created by scavenging at the end of the exhaust stroke, was solved by a novel gas-injection

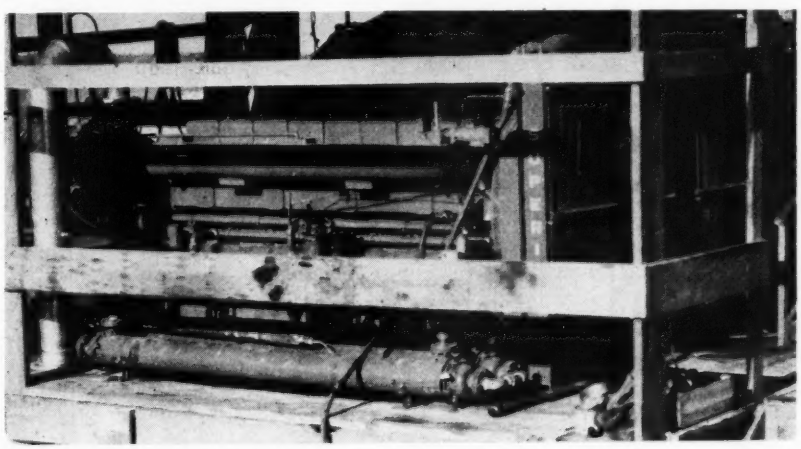


Fig. 1—Supercharged dual-fuel diesel engine tested on a rotary drilling rig drive in California.

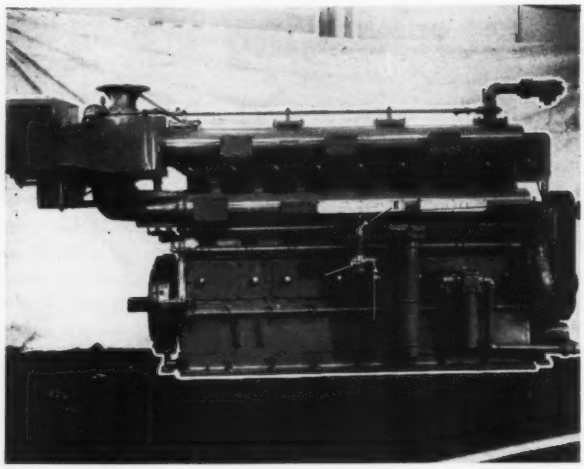


Fig. 2—Manifold side of a PTDS-8 supercharged dual-fuel engine without radiator, showing gas admission valve (H), its actuating hydraulic cylinder (J), and butterfly valve (K) for speed and load control.

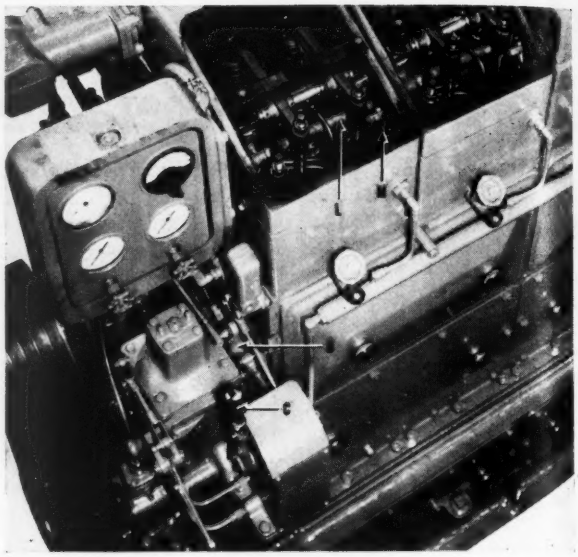


Fig. 3—Controls and rocker assemblies of the PTDS-8 supercharged dual-fuel engine, showing starting air valve (B), control lever (C), eccentric bushed rocker (L), and its actuating hydraulic cylinder (M).

system. In this system, shown diagrammatically in Fig. 4, the starting air check valve for dual-fuel engine operation is used for injection of gaseous fuel. This makes the heads of straight diesel and dual-fuel engines interchangeable.

To start the engine the control lever (C) in Figs. 2 and 4, is thrown to starting position. This admits starting air under pressure to the manifold (A). While the engine is starting the gas valve (H) in Figs. 3 and 4 is closed and the hydraulically actuated eccentric bushing (L) disengages cam control of the air check valve (F), allowing it to act simply as a spring loaded check valve. High air pressure forces the air timing valve (D) down against the cam shaft to time admission of starting air to the cylinder.

After the engine is started, the control lever (C) is moved to an intermediate position which prevents both starting air and gas from entering the manifold, and the engine operates on oil.

If dual-fuel operation is desired, the control lever (C) is moved farther to open oil valve (N) which actuates the hydraulic cylinders (J and M) on gas admission valve (H) and eccentric bushing (L). Gas is then admitted to the starting air manifold where it is controlled by butterfly (K) and injection valve (F). The air timing valve (D) remains open because the gas pressure is not sufficient to force it down on the cam against its spring.

The fuel consumption of the supercharged dual-fuel engine as compared with the straight supercharged diesel and conventional spark-ignition gas engine is shown graphically in Fig. 5. Both the straight diesel and dual-fuel diesel are shown to be more efficient than

(Continued on Page 32)

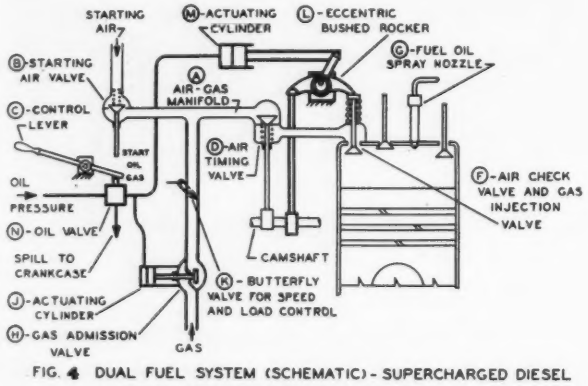
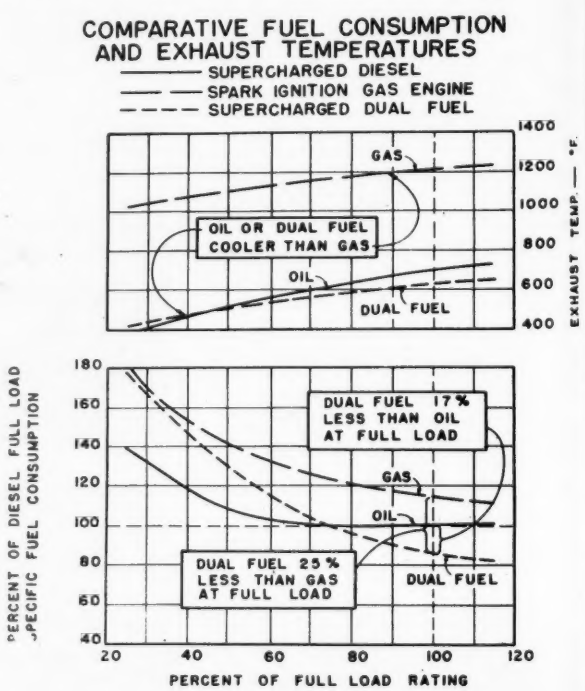
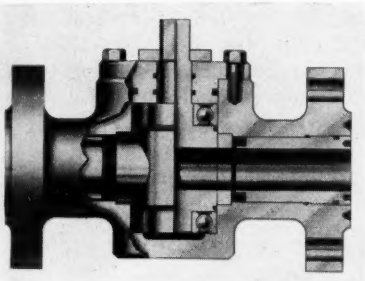


FIG. 4 DUAL FUEL SYSTEM (SCHEMATIC)- SUPERCHARGED DIESEL
HEAVY LINES SHOW ADDED DUAL FUEL PARTS



A New Non-Lubricated Plug Valve

A new, quick-opening high pressure fluid control valve, known as the "LJS Plug Valve" is now in production at Johnson Foundry and Machine Company, Los Angeles, California. LJS Valves feature a straight, non-tapered plug that requires no lubrication and is suspended top and bottom on sealed ball bearings which take the thrust radially. This plug is the only moving part. A quarter turn opens and closes valve at high pressures and temperatures, requiring very little torque.



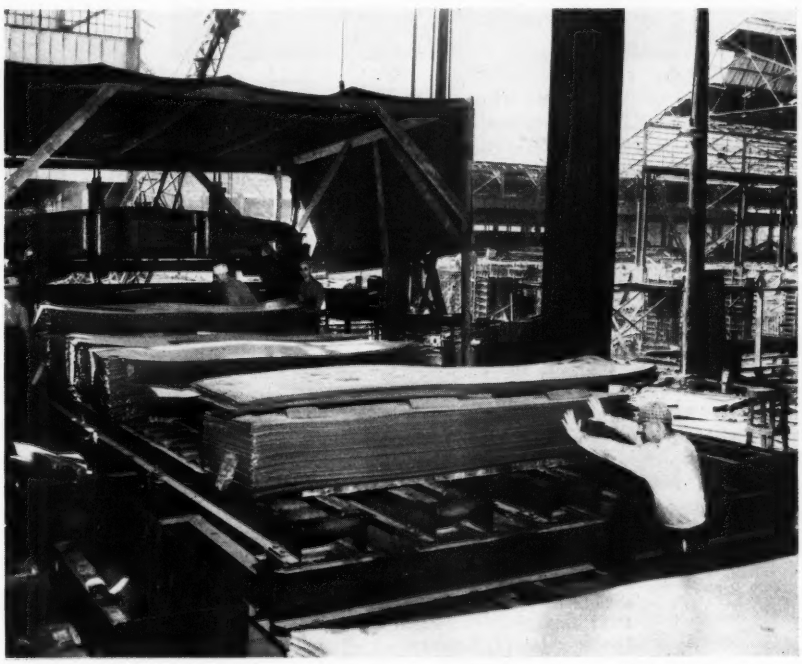
"Floating" seats of hardened steel are ground and lapped for a precision fit with plug for perfect seal at each port. Plug does not touch body at any point, keeping friction to a minimum. Behind each seat, an expansion gland forces seat tightly against plug with just enough "give" to prevent plug from ever seizing or sticking. These glands are held in place by replaceable steel retainer sleeves. At no time does fluid ever come in contact with valve body; wear can only result from longitudinal flow of fluids. All wearable parts (plug, seats, glands, sleeves) may be replaced right on the job without use of special tools. LJS Valves need never be returned to the factory for repair or replacement.

Straight line flow offers no restrictions, creates no turbulence and effectively resists corrosion, heat, abrasion and product contamination. Flange and screw type LJS Plug Valves are available in ferrous, nonferrous and special metals for every type of industrial use. Now in service in oilfields, refineries, pipe lines, processing industries and many important industrial applications, LJS Valves are among the easiest to operate and service of any high pressure valve in use today.

Lane-Wells Announces Shaped-Charge Perforating

Lane-Wells Company will make available to the petroleum industry a new type of gun perforator incorporating the principles of the shaped charge, according to the announcement by Rodney S. Durkee, president.

This development is the result of an agreement with Byron Jackson Company licensing Lane-Wells to provide this new service in the field. The service, to be called KONE-SHOT Perforating is a patented method of perforating casing and open hole by means of a high velocity jet produced by shaped charges. It will be necessary for Lane-Wells research and engineering department to complete laboratory and field tests before equipment can be completed to provide commercial operation of the new service. Lane-Wells Technical Oil Field Services now include Selective Gun Perforat-



STEELMAKING UNDER CANVAS is not just a publicity story for California weather, but a necessity brought about when Columbia Steel Company, a U.S. Steel subsidiary, began erecting a new $25,000,000 steel sheet and tinplate mill at its Pittsburg, California, Plant.

The critical shortage of steel sheets caused the company to continue operations of its old sheet mill to the last possible moment in order to continue the flow of this much needed product to western consumers. This resulted in a gradual encroaching of the new mill around the old, with many unique operating problems. Old buildings were dismantled and new ones erected in their place. Meanwhile, the old sheet mill continues to operate, an island of operational activity, in a sea of busy steel construction. At the last possible minute, the old mill will be dismantled and pulled out to make way for installation of the new mill machinery.

They encourage carelessness–reduce efficiency–cause accidents–lower morale–create fire hazards–slow down operations–*cost money.*

You don't need hand-spudding, scraping, scrubbing, or machines, to clean your floors. Clean them the fast, the low-cost, the safe, the easy way.

CLEAN YOUR FLOORS THROUGH CHEMISTRY!
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No matter what the soil–oil, grease, shavings imbedded in dirt and crud, or worse...no matter what the floor–wood, cement, composition, tile, linoleum...Kelite pH Control shows immediately the right way to clean it *efficiently* and *thoroughly.*

Write today–or phone your local Kelite office–and just say "Show us the Kelite way to clean our floors." Costs you nothing and, like hundreds of Kelite customers, you may discover a new way to improve the efficiency of your plant. Kelite Products, Inc., P. O. Box 2917–Terminal Annex, Los Angeles 54, California.

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KELITE pH Control

Industrial Chemicals for Cleaning and Processing
Manufacturing Plants in Los Angeles, Chicago, Dallas, Australia
Offices in principal cities

ing, Radioactivity Well Logging, Packers, Drillable Bridging Plugs and Electrolog.

The addition of KONESHOT Perforating is being made to increase the equipment selection available to oil well operators and provide additional facilities designed to aid in the efficient recovery of petroleum.

New Training Film Features Cameron "QRC" Blowout Preventers and Mud Valves

"Quick Change" is the title of a new training film recently completed for Cameron Iron Works, Houston, Texas. Show Time: 20 Minutes.

Filmed in technicolor and with narration, "Quick Change" illustrates the speed and simplicity of changing rams in the new Cameron Type "QRC" (Quick Ram Change) Pressure Operated Blowout Preventers.

The film also demonstrates the step-by-step procedure of dismantling a Cameron "Flex-Seal" Mud Valve in the field, replacing its worn parts and re-assembly, the entire operation requiring only ordinary rig tools and little time.

Several copies of the picture are now in the Cameron library and are available for showing to interested groups.

Lost Hills Try Drills

Standard's North Lost Hills test, S. F. & F. L. No. 4-2 in Sec. 12-25s-19e, is drilling steadily on down at 7148 ft.

Inglewood Well Going

Cleveland Oil Co. is drilling at 7913 ft. with its Machado No. 6-A in Sec. 7-2s-14w in the Inglewood field. The company has acquired the entire interest of Hogan Petroleum in the lease, which embraces 35 acres containing 10 wells.

Del Valle Try Perfs

R. E. Havenstrite, Operator, has killed Lincoln No. 15 and is ready to gun perforate to take in additional formation. The well was brought in some months ago at 11,865 ft. as a deep zone discoverer.

THIS LAUGH OFF!!

Rastus: Say, Sambo, what time in yoah life does yo' think yo' wus scared de worstes?

Sambo: Once when ah wuz callin' on a married gal and her husban' came in and caught me. Boy, wuz ah scared!

Rastus: How are you' shuah dat wuz de worstes time?

Sambo: 'Caus her husban' turned to dat wife of his an' says, "Mandy, what's dis white man doin' heah?"

He stopped at a small hot-dog stand and ordered coffee. Just to be polite, he said: "Looks like rain, doesn't it?"

"Well," snapped the testy proprietor, "it tastes like coffee, doesn't it?"

We have it on good authority that the addition of a glass of beer will improve the flavor of a pinch of salt.

"Here's that shirt I bought from you last week," said the angry customer. "You said you would return my money if it wasn't satisfactory."

"That's what I said," responded the merchant politely, rubbing his hands, "but I am happy to tell you that I found the money very satisfactory."

Husband: "I've got to get rid of my chauffeur . . . he's nearly killed me four times."

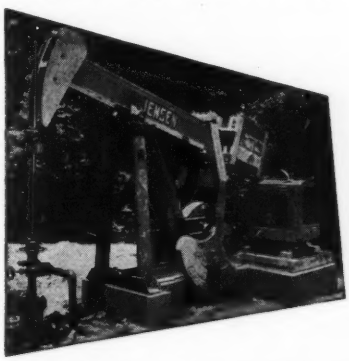
Wife: "Oh, give him another chance!"

Truck Driver: "I oughta knock some sense into your head."

Other Truck Driver: "Yeah? Neither you nor nobody else can do that, see?"

"You the bird that advertised for an aggressive young Oil Salesman?"

Why Producers Prefer



JENSEN Pumping Units

After all, producers are people, and like most people they prefer machinery that does its job dependably, without a lot of fuss and attention.

Little wonder, then, that producers do prefer Jensens. For 28 years they have been built to meet rigid standards for service, performance, economy and dependability.

Once you find out about Jensens you'll prefer them, too. Check with any Jensen owner or your dealer. They have the answers for producers who demand even more reasons than people.

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Personalities IN THE NEWS

Oblad and Dart Join Houdry

C. G. Kirkbride, Manager of Houdry Laboratories, has announced the appointment of Dr. Alex G. Oblad and Mr. Jack C. Dart as Director of Chemical Research and Director of Development respectively. The new men will make their headquarters at the Houdry Laboratories near Marcus Hook, Pennsylvania.

Dr. Alex G. Oblad

Dr. Oblad is an outstanding chemist with broad experience in the petroleum industry. He has worked chiefly in the fields of hydrocarbon catalysis, chemical thermodynamics of hydrocarbons and physical methods of analysis. He was graduated from the University of Utah and obtained his doctor's degree in physical chemistry from the University.

His professional career includes work in the Research Department of Standard Oil Company (Indiana); the Field of Research Department, Magnolia Petroleum Company, where he became Chief of Chemical Research; and later as Head of Industrial Research for the Texas State Research Foundation at Dallas. He was counsellor of the Dallas-Fort Worth Section of the American Chemical Society and has served on various committees.

Jack C. Dart

Mr. Jack C. Dart is likewise a well-experienced man in all phases of petroleum development. His academic training includes an A.B. degree from Albion College. His studies in chemical engineering were continued at the University of Michigan where he received his Bachelor's and Master's degrees in chemical engineering.

His professional career includes employment with Pan-American Refining Corporation, Magnolia Petroleum Corporation, and Standard Oil Development Company. He is a member of the American Institute of Chemical Engineers' program committee and this year was chairman of the Institute's Baton Rouge Section. He is a member of the American Chemical Society and of two honorary engineering societies.

Du Pont Advances Simpson and Cornwall

The Du Pont Company announced recently the appointment of E. Hearn Simpson to the newly created position of assistant sales manager of petroleum additives, and Barry V. Cornwall to succeed him as sales manager for the alcohol and camphor section. Mr. Cornwall will also be manager of sales for "Five-Star" anti-freeze.

Mr. Simpson's appointment is the result of expanding activities of Du Pont's Petroleum Chemicals Division for the direct sale of tetraethyl lead to the refining industry. Du Pont will start marketing its own anti-knock compounds on January 1, 1948.

Mr. Simpson, 38, and a native of Washington, D.C., has been with Du Pont since 1930. He joined the company in 1930 after studies at the University of Denver where he gained a bachelor of science degree in commerce. He has had a variety of sales and sales management experience, mostly with the Alcohol Division. For five years his experience included selling petroleum antioxidants to the refining industry in the mid-continent and gulf-coast area.

He entered the Navy in January, 1943, and served as supply officer on aircraft carriers in the Pacific. He returned to Du Pont January 15, 1946, as sales manager of alcohol and camphor.

Mr. Cornwall, 38, a native of Winnipeg, Canada, came to the Du Pont Technical Laboratory on graduation from Clemson College in 1929, with a bachelor of science degree in chemistry. He was transferred in 1932 to the Trade Analysis Section of the Organic Chemicals Department, then named sales correspondent for the Alcohol Division the following year. In 1934, he was appointed a salesman in

the eastern territory. From April, 1942, to March, 1946, he served in the Army, some of the time as an officer in the Philippines.

Axelson Announces Changes In Top Personnel

Announcement has been made by Mr. J. C. Axelson, President and General Manager of Axelson Manufacturing Company, of the retirement and resignation from that firm of Mr. D. F. Axelson, formerly Vice-President in Charge of Manufacturing, effective September 21, 1947.

R. M. Pease

Widely known throughout both the machine tool and petroleum equipment industries, D. F. Axelson's retirement marks the close of some forty years' association with the company, founded in 1892 by his father and uncle.

Victor Mancuso

Mr. Axelson's retirement has resulted in the promotion of Mr. R. M "Bob" Pease, formerly Vice-President and Manager of the St. Louis, Missouri plant to Vice President and Assistant General Manager.

Also promoted in the Axelson organization is Mr. Victor "Vic" Mancuso, formerly Works Manager, to the position of Vice-President in Charge of Manufacturing.

Mr. Pease first joined the Axelson organization in 1917; Mr. Mancuso has an uninterrupted service record with the company since 1919.

Texas Announces Changes In Purchasing Dept. Personnel

R. M. Morrison, General Purchasing Agent of The Texas Company since 1944, has been appointed Manager of the Purchasing Department, it was announced recently by Harry T. Klein, President of the company. He succeeds R. S. Hatch, who goes to Arabian American Oil Company.

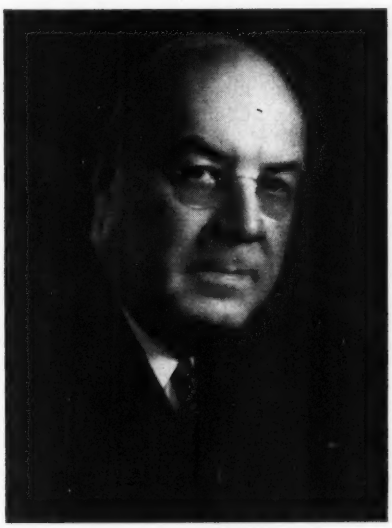
Philip Hauck succeeds Morrison as General Purchasing Agent. W. G. Taylor replaced Hauck as Divisional Purchasing Agent at Chicago, and F. G. Schlemmer of Los Angeles becomes Northern Divisional Purchasing Agent at New York to succeed Taylor. M. E. Hankins replaces Schlemmer as Assistant Purchasing Agent at Los Angeles.

Morrison was born in Boston and attended school in California. He entered the oil business in 1914 as a roustabout for the Montebello Oil Company at Fillmore, California. Later he was employed by Tay Pike Oilwell Supply Co. and Ventura Refining Co., Los Angeles. In 1926 he became Buyer and Assistant Purchasing Agent of California Petroleum Corporation, retaining that position when Calpet was acquired by Texaco. In 1939 he was transferred to New York as Purchasing Agent and became General Purchasing Agent in 1944. Until recently he was Chairman of the Oil Buyers Group of the National Association of Purchasing Agents, which position he held since 1944.

Hauck, native of Nebraska, has been with the company since 1927, and was transferred in 1945 from Los Angeles to Chicago as Divisional Purchasing Agent. Schlemmer, a Californian, started with the company as a roustabout in 1927, and has been Assistant Purchasing Agent, Pacific Coast Division, since 1943.

Fluor Announces Managerial Set-up

The Fluor Corporation, Ltd., Los Angeles, has announced its new managerial organization following a special meeting of the board of directors on September 18, which was necessitated by the recent untimely death of the company's president and chairman of the board, Peter E. Fluor.



Shirley E. Meserve

Shirley E. Meserve, vice president and general counsel, was elected president. Mr. Meserve, an outstanding man in the legal field ever since his admission to the practice of law in 1912, has supervised Fluor's legal affairs since 1926, being made a director of the corporation in 1937. He is also a senior member of the law firm of Meserve, Mumper and Hughes, Los Angeles.

W. Earl Dunn, vice president and general manager, will now serve as executive vice president; D. W. Darnell, vice president and chief engineer, was promoted to vice president and general manager; and J. Robert Fluor, manager of manufacturing, was named vice president and assistant general manager.

James P. Wiseman, director of sales, and T. H. Seavey, manager of purchases, both were made vice presidents. Francis E. Fischer continues as secretary-treasurer.

Robert L. Merrick, assistant chief engineer, was elevated to chief engineer, and Foster M. Stephens, director of development, was advanced to assistant manager of manufacturing.

Fluor's board of directors consists of the Messrs. Meserve, Dunn, Darnell, J. R. Fluor, Wiseman, Seavey, Fischer and Fred C. Fluor.

Fourteen members of the Union Oil family celebrated their 35th anniversary with the company and two their 40th at the company's annual "35 Year" party. Those honored and receiving special recognition from the company for their long service were:

Forty-year men: M. L. Del Monte, foreman, Oleum; and Fred M. Woodard, field operator, Brea.

Thirty-five year men: Robert Annand, stillman, Rodeo; Earl H. Canet, engineer, San Luis Obispo; Albert F. Gover, field mechanic, Placentia; Frank Lewis, pipefitter, Pinole; Jesse G. Marshall,, fire and safety supervisor, Long Beach; Henry C. McMaster, superintendent of salvage sales, Fullerton; Andreas Morland, captain of SS Lompoc, San Pedro; William J. O'Neill, stillman, Rodeo; Clarence W. Peck, special clerk, Whittier; Guy E. Pyle, construction foreman, Witter Springs; Clarence E. Ransom, warehouseman, Montebello; J. C. Rector, coordinator of equipment and safety and fire supervisor, Whittier; Eugene a Whitten, senior mechanic, Norwalk; and Lawrence Wolff, manager of refinery sales, Encino.

Fred Sperber, long identified with California oil development, is engineer for L. C. Gould, Operator, who is sponsor of a wildcat test in the Comanche Point area.

Reese H. Taylor, Union Oil president, is on a three weeks business sojourn to Washington and other Eastern points.

Thomas M. Milburn, who was in charge of the land department of Pacific Western and George F. Getty, Inc., interests from 1928, has resigned and has joined Loren L. Hillman, Inc., with headquarters in the Subway Terminal Building.

Harley C. Stevens has been appointed assistant to Ralph K. Davies, president of American Independent Oil Co. Stevens, who is a resident of San Francisco, will have offices there. He served with the War Department Price Adjustment Board and Office of Strategic Services during the war. He is presently abroad for the company, which is planning an oil development campaign in the Middle East.

E. O. (Olie) Olson, a leading oil scout in California for more than 20 years, died at his Pasadena residence, a victim of a heart attack.

His career with the petroleum industry, started as a scout with the old California Petroleum Corp., which subsequently became the Texas Co.

During the past two decades, he has edited the Olson Scouting Service, which, since he joined forces with Bill Murphy, has been known as the M. & O. Scouting Service. Olson left his widow and five children.

Mrs. Irma Downey, who in recent years has worked the graveyard shift on General Petroleum's telephone switchboard in the Higgins Building at Los Angeles, has retired. Her immediate plans call for a trip to Annapolis to see the commander under whom her Naval radioman son served when he was killed at Corregidor.

EASTERN GUESTS AND OFFICERS OF CNGA FALL MEETING, OCTOBER 10, 1947

Front row, L-R: Dan T. McDonald, Magnolia Petroleum Co.; Harry Fiske, Ingersoll-Rand Co., New York; G. M. Liljenstein, California Company, New Orleans; E. O. Bennett, Houston; W. A. Kirk, CNGA Vice-President; C. R. Williams, President NGAA.

Second row: Wm. F. Lowe, Secretary NGAA.; Harry Peers, Ingersoll-Rand Co.; W. S. McAllister, Warren Petroleum Co.; Ray Miller, DuPont Co., Wilmington, Del.; F. J. Colton, President CNGA.

Back Row: E. R. Millett, Jr., CNGA Secretary-Treasurer; R. S. Ridgway, Chairman Fall Meeting.

F. A. Hough, executive engineer for Southern Counties Gas, spoke on the "Texas Gas Line" at the October luncheon meeting of the Petroleum Accountants Society at the Biltmore Hotel in Los Angeles. David I. Meriney, Shell Oil, was chairman of the day.

Mrs. R. M. Henderson and daughter have left Palo Alto, Calif. by airliner to join Mr. Henderson, who is with the Arabian-American Oil Co. at Dhahran, Saudi Arabia. Henderson formerly was with the P. G. & E. Co. in the Coalinga area. He left the Fresno County city three years ago to go with the Arabian organization.

Sam Goldman, director of sales for Douglas Oil, was in charge of the company's semi-annual distributors meeting at the Los Angeles Mayfair Hotel. Speakers included Chuck Dowden, assistant director of sales, Earle Hildreth, manager of lubrication, Jack Hall, battery and accessory manager, and Harry Stouffer, tire manager.

Election of Arthur F. Bridge as president and general manager of the Southern Counties Gas Co., has been announced. Bridge, formerly vice president and general manager, succeeds F. S. Wade, who continues as a member of the board of directors and as president of the affiliated Southern California Gas Co. Guy W. Wadsworth was named to to the board of directors and to the post of vice president and assistant general manager. F. A. Hough was made a vice president.

H. F. Peterson, manager of surveying and mapping for Shell Oil, will direct the fall and winter instruction in oil mapping at U.C.L.A. Arrangements for the course were made by the educational committee of the Oil Map Association and the division of engineering extension of the university.

Tejon Try Goes Ahead

Drilling & Production Co. has reached 2450 ft. with J. V. No. 65-32 in Sec. 32-11n-19w in the Tejon area and is about to start coring operations.

Personnel Changes in Natural Gas Equipment Incorporated

The Natural Gas Equipment Incorporated has announced the assignment of A. E. (Gus) Wetzel to sales. Gus is well known to the industry through his long association with N.G.E., and his activities in the Lions Club, Southern California Meter Association and C.N.G.A. He has served N.G.E. in the capacity of Office Manager for the past 15 years, and is looking forward to the renewal of many acquaintances in the field.

R. H. (Bob) Thomas succeeds Gus as Office Manager. Bob started with N.G.E. in 1940. He served in the Statistical Control Section of the Army Air Forces during the war. Bob will be assisted by Malcolm Parker, who has had contact with the oil industry, formerly employed by The Texas Company, and more recently returned from foreign duty with Arabian American.

C. D. Lanzit continues as the representative in the Valley, with headquarters at Bakersfield. Art Staat and Herb Duncan are operating in the San Francisco Bay Area directing sales and engineering of the N.G.E.-Wilgus lines and Surface Combustion space heating equipment.

H. F. Jones, L. Leemhuis and Mal Lowe are still operating in the Southern California area.

Sales activities are all under the immediate supervision of J. C. (Mac) McCluskey.

The home office of Natural Gas Equipment Incorporated is in the Petroleum Building, Los Angeles and branch offices are maintained at 1150 Folsom St., San Francisco and 600 Ann Arbor Drive, Bakersfield, California.

Operations cover all of Washington, Oregon, California and Arizona, directly and through selected representatives. Midwestern and Eastern areas are represented through Webster Engineering Company and Surface Combustion Corporation.

Howard Keck, widely known Los Angeles member of the oil fraternity, has become a real automobile racing fan. He owns a good share of the Arlington Downs, Tex., track, and at present is building a 270-cubic-inch Meyer-Drake Offie for the Indianapolis races next year. He entered auto racing last year with the purchase of two midgets from Johnny Balch.

Western Oil and Gas Association's Don Gilman has gone to New York for a conference with members of the API's public relations committee. Gilman is chairman of the district 5 public relations group, which in recent months has been organizing sub-committees in several Western states.

With the passing of Merton T. Archer, director of research for National Supply Co. at Los Angeles, the oil field supply industries lost one of its most popular members. He died at his home, after an illness of several weeks. He leaves his widow, Mrs. Beatrice Archer; two daughters, Mrs. Beatrice Grasso and Miss Mary Archer; and a brother, John A. Archer of the Crucible Steel Co., Harrison, N.J.

J. O. (Ollie) Pfeifer has been appointed division manager for General Petroleum's marketing department in Southern California. He has been with the company since 1920.

Gus Wetzel

Malcolm Parker

Bob Thomas

W. B. Sawyer, Jr.

Eric Barnett

C. L. Hamman

Columbia Announces Sales Executive Appointments

The appointment of C. S. Conrad to the position of General Manager of Sales for Columbia Steel Company, subsidiary of United States Steel Corporation, was announced recently by F. B. DeLong, Vice-President in Charge of Sales.

Three other sales executive appointments were announced simultaneously. They were the appointments of W. B. Sawyer, Jr. as Assistant General Manager of Sales—Administration; Eric Barnett, Assistant General Manager of Sales—Distribution; and C. L. Hamman, General Sales Staff Manager.

Conrad is a native of DeKalb, Illinois, and attended the University of Illinois and the University of Wisconsin. He joined Columbia Steel Company in 1932 as a salesman and advanced to the position of Assistant General Manager of Sales—Manufacturing and Construction Accounts. He lives at 419 Hillsborough Blvd., San Mateo.

Sawyer was born in Riverside, California and graduated from the University of California in 1910. He became associated with Columbia Steel Company in 1914, and rose to the position of Assistant General Manager of Sales—Wire Products. His residence is at 1415 Morton Avenue, Alameda.

Barnett is a native of Sydney, New South Wales and is a graduate of Stanford University with the class of 1925. He joined Columbia Steel Company in 1929 as a salesman, and for several years was attached to the Company's Los Angeles office. Prior to his present appointment, he advanced to the position of Assistant General Manager of Sales — Market Development. His residence is at 161 Harrison Street, Sausalito.

C. S. Conrad

Hamman was born in Pasadena, California and graduated from Stanfor University in 1931. He became associated with Columbia Steel Company in 1942 as Chief Market Research Engineer. In 1945, he was promoted to Manager of Sales Market Research, and shortly thereafter assumed the additional responsibility of Manager of Advertising. He lives at 215 Cowper Street, Palo Alto.

James Dreyer, pipe line gauger for General Petroleum at Wilmington, has rounded out 30 years service with the company. Better known as Jim, he came to the United States from Scotland when still a young man.

Edwin W. Pauley, president of the Petrol Corp. and a national leader in the Democratic party, was the principal speaker at special memorial services on Armistice Day in Patriotic Hall, Los Angeles.

Dick Johnson of Sunray Oil's refinery at Santa Maria has transferred his scene of activities to the company's plant at Duncan, Okla.

E. O. Slater, president of Smith-Emery Corp., was a chief speaker at the technical meeting of the Southern California section of the American Institute of Mining and Metallurgical Engineers in the Hollywood Auditorium of the Southern California Gas Co.

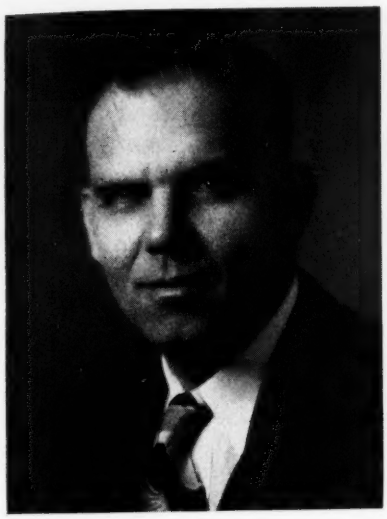
Slater outlined the professional engineers' act, recently placed in effect by California and calling for the registration of petroleum, civil, mechanical and electrical engineers.

With Virgil Kane as manager and pitcher, Shell Chemical's Dominguez baseball team completed an undefeated season, winning eight games in the district Shell league.

Roy Bean Returns To California

The many California friends of Roy N. Bean will be glad to learn that he has returned to California, and has reentered the oil well supply business.

Roy Bean has been appointed



Roy N. Bean

California Manufacturer's agent for the Oil Center Tool Co., The Southwest Co., Oil Tool Manufacturing Co., and Universal Packing and Gasket Co., all of Houston, Texas. Roy was formerly sales engineer for Cameron Iron Works, Inc.

Offices have been established at 800 E. Ocean Blvd., Suite 910, Long Beach, and friends can reach him at Long Beach 6-7261.

General Petroleum is sponsoring a new series of four-hour first aid courses under the direction of John E. Chapple, a qualified instructor, who has been in charge of first aid at the Torrance refinery. The courses will be held at Vernon, Santa Fe Springs, Ventura, San Joaquin Valley and marketing terminals in Oakland, Portland and Seattle.

Fourdeer Try Works

Sunray Oil Corp. is washing perforations and acidizing its Los Flores No. 1-A in Sec. 4-8n-33w in the Fourdeer area. Drilled to a total depth of 5978 ft., the hole is bridged at 4568 ft. The perforated interval is 4450-4505 ft. Foundation is in for Los Flores No. 4.

McCool Advanced By American Iron & Machine

The American Iron & Machine Works Company has announced the resignation of Earl W. Miller as General Manager, effective as of October 1st. He is being succeeded by M. G. McCool as Executive Vice-President and General Manager. McCool has been with the company more than twelve years. He was originally District Manager in West Texas, being made Sales Manager in 1940, a position he occupied until the recent appointment.

M. G. McCool

November Meeting So. Calif. Meter Assn.

The next meeting of the Southern California Meter Association will feature a paper on "Fuel and Steam Economy" by Mr. Merrill Berkley, of the Berkley Engineering and Equipment Company. He will discuss the application of various instruments and controls used in effective fuel savings and in reducing steam waste in the average industrial plant.

On this same program, Mr. Preston W. Hill, of the Signal Oil and Gas Company, will give a talk on a subject in the category of S.C.M.A.'s "Bugs on Parade" feature.

The meeting will take place at the Rio Hondo Country Club on Old School River Road, and will start with dinner at 6:30 P.M. The date is Thursday, November 20.

At opening of The Republic Supply Company's newly enlarged offices and warehouse building at Bakersfield: Left to Right: Bob Doe, Robert B. Doe, Well Service Co.; George W. Gutekunst, Gardner-Denver Co.; Don Frase, Int. Cementers; Bill Elliott, Garnder-Denver Co.

Field Development

PREPARED FROM CALIFORNIA OIL WORLD NEWS SERVICE

Los Angeles Basin

West Newport Active Center

Increased activity is noted in the West Newport area of Orange County.

Republic Operators, Inc., which recently completed at 3528 ft. its Newland No. 3 in Sec. 12-6s-11w for a substantial oil yield, has foundation in for No. 4 and location staked for No. 5. Hiawatha Exploration, meantime, is drilling below 2000 ft. with its Atha No. 5 in Sec. 13. Amerada Petroleum's Farnsworth No. 47-7 in Sec. 7-6s-10w is swabbing for production from 5550 ft. No. 57-7 is a location in the section. No. 37-7 is a foundation. In Sec. 1-6s-11w, Honolulu Oil is drilling at 6037 ft. with Holtz No. 1-81. Morton & Kohlbush's Anaheim Sugar No. 7-2 in Sec. 7 has reached 4400 ft. and is drilling on down.

Hesperia Test Strikes Granite

Allied Oil & Gas Corp. has abandoned at 1766 ft. its Moore No. 1 in Sec. 17-4n-1w in the Hesperia area of San Bernardino County. Granite, topped at 1400 ft., persisted to bottom at 1766 ft. The project was formerly called Chief No. 1.

Newhall Area Adds Interest

Bankline Oil Co. has location staked for Newhall Corp. No. 1 approximately 750 ft. due south of the center of Sec. 31-4n-16w in the Newhall area. Considerable acreage is involved in the play. The company's ground is due east of General Exploration's new Ferguson well.

Elsewhere in the general area,

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consisting of 300 bbl. tower and four large vessels, all heavy beveled plate.

FLUOR COOLING TOWER WITH COPPER COILS.
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5000 Feet—8⅝ Inch, 28 and 32 Pound Pipe
1000 Feet—7 Inch, 24 Pound Pipe
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MISCELLANEOUS VALVES,
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MISCELLANEOUS SMALL PIPE

All above located Santa Maria area. Readily available for shipment.

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KARDA CORPORATION

ROUTE 1, BOX 199
SANTA MARIA, CALIFORNIA

Standard of California is drilling at 4680 ft. with its Frew No. 1-4 in Sec. 29-3n-16w. The company's Newhall L. & F. No. 5-1 in Sec. 34 is spot coring below 7000 ft.

Mutual Development Corp. is rigging up for Sanborn No. 1 test well in Sec. 6-3n-16w. It is one location southeast from the Aztec Oil Co.'s Sanborn No. 1 wildcat. Mutual, meanwhile, has suspended operations at 6247 ft. in its Lassalle No. 1 in Sec. 10-3n-16w. The venture was seeking the third Miocene zone of the Newhall-Potrero field. When drilling is resumed a heavier derrick will be used. Aurora Corp.'s Braille No. 2 in Sec. 1-3n-16w is idle at 3586 ft.

Anaheim Try Coring Ahead

Southwest of Anaheim, Tide Water Associated is coring ahead at 7639 ft. with its Nel-Cal-Lu Comm. No. 1 in Sec. 21-4s-10w, Orange County.

Inglewood Test Digs

Basin Oil last was reported drilling ahead at 10,279 ft. with Inglewood Comm. No. 2-1 in Sec. 28-2s-14w in the Inglewood area. Water shut off on 7-in. casing set at 9947 ft. was okay. In the Richfield area of Orange County, Collins-Wilson Comm. No. 1 in Sec. 33-3s-9w is about to spud.

On the far southeast tip of the Inglewood field, Standard of California has placed on the pump its L. A. T. No. 1-87 in Sec. 17-2s-14w. Plugged back from 2255 ft. to 1910 ft., initial yield apparently was all water.

Alondra Try Digs

South of its recently abandoned Bodger No. 4, British-American Oil Prod. Co. is rigging up to start the drill in Village Comm. No. 1 test in Sec. 22-3s-14w in the Alondra area. Severns Drilling Co. is contractor. General Petroleum's Alondra Comm. No. 8-1 is Sec. 16 is a rig.

Oak Canyon Try Repairs

Equipment repairs have put a temporary stop to drilling at 3300 ft. in Continental Oil's Videgain

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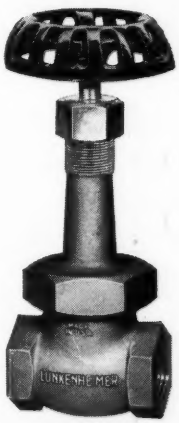

Fig. 2228
200 lb. Bronze
Union Bonnet Gate

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LUNKENHEIMER VALVES

No. 1 wildcat in Sec. 4-4n-17w, between Del Valle and Oak Canyon.

Lawndale Try Works

On formation test, with packer at 7950 ft., and a 1031-foot water cushion, Seaboard Oil's Johnson No. 2 in Sec. 17-3s-14w in the Lawndale area showed a strong sustained blow during a one-hour period. Present depth is 8000 ft. Pauley-Seaboard No. 51-20 in Sec. 20 is making hole at 1000 ft.

Val Verde Try Coring

In the Val Verde area, Texas Co. is spot coring at 7732 ft. with Malis No. 1 in Sec. 10-4n-17w, Los Angeles County.

Elsmere Try Partly Rigged

Nelson-Phillips Oil Co.'s Kraft No. 1 wildcat in Sec. 31-4n-15w in the Elsmere area of Los Angeles County is partly rigged, but currently idle.

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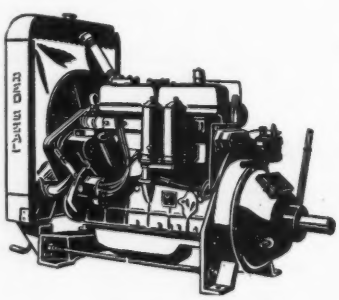

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Springs Test Drills Deeper

Standard's Houghton Comm. No. 1 on the west edge of the Santa Fe Springs field in Sec. 36-2s-12w is drilling at 6070 ft. in sand and shale.

Castaic Test Makes Repairs

With hole bottomed in surface formations, L. R. Wilhite and Claude Kavanaugh are repairing equipment on Wilhite-Jenkins No. 1 test in Sec. 18-5n-16w in the Castaic area.

El Toro Try Drills

In the El Toro area of Orange County, Morton & Sons is drilling at 1000 ft. with El Toro Co. No. 14-1 in Sec. 14-6s-8w. The project formerly flew the banner of Morton & Kohlbush.

Whittier Well Drills

Livingston Drilling & Development Co.'s Dewey No. 1 wildcat in Sec. 1-3s-11w in the East Whittier area is drilling at 7450 ft.

Los Angeles Try Pumps Off

Having pumped off, Richfield Oil is pulling rods from Vail No. 3 in Sec. 16-2s-12w in the East Los Angeles area. Total depth is 9200 ft. L. A. River Comm. No. 1-1 in Sec. 34-1s-13w is standing plugged at 970 ft. U. S. Rubber No. 1 in Sec. 16-2s-12w has reached 4390 ft.

Deep Zone Wells Go

Searching for deep zones recently uncovered by Shell Oil in the Long Beach area, General Petroleum is drilling at 9663 ft. with I.P.C. No. 4 in Sec. 29-4s-12w. Pacific Western's Hilton-Stanton No. 1 in the section is making hole at 6259 ft. Shell's followup to its discovery well, Alamitos No. 49-A, is drilling at 4587 ft.

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TR-2231. ATTN: A. C. Martin. 11-5b

Coastal and Northern District

Huasna Wildcat Drilling Ahead

Danciger Oil & Refining Co., widely known Mid-Continent producing and marketing organization, is drilling at 250 ft. with Twitchell No. 1 wildcat in Sec. 35-23s-15e in the Huasna area of San Luis Obispo County.

Byron Gas Test Spuds

Amerada Petroleum has spudded its Cal-Pack No. 1 gas test in Sec. 10-1s-43e in the Byron area of San Joaquin County and is running surface pipe, with bottom at 553 ft. The drill site is two miles northwest of Tracy.

Kirby Hills Try Drilling

Bishop Oil Co. is drilling at 718 ft. with Bishop-Calaveras-Triguero No. 1 in Sec. 5-3n-1e in the Kirby Hills, Solano County. Shell Oil's Lambie No. 6 in Sec. 30-4n-1e is redrilling at 2680 ft., after setting whipstock at 2353 ft. Original depth is 7896 ft. Lambie No. 5 is a location in Sec. 5. Harper No. 1 in Sec. 14 is driving piles.

West Mountain Adds Location

F. E. Fairfield has staked location for Converse-Hill No. 5 in Sec. 21-3n-21w in the South Mountain area. Shell Oil's Schieferle No. 4 in Sec. 17-3n-20w is pumping 65 barrels of oil daily, after finishing at a plugged depth of 4902 ft. The project was deepened from 4105 ft. It went to 6495 ft. before plugging uphole.

Sespe Try Drilling

In the Sespe area, Eagle Rock Petroleum Co. is digging in shale at 735 ft. with Eagle Rock No. 1 test in Sec. 36-5n-20w, Ventura County. Kirk Oil Co.'s Edward No. 1 in Sec. 27-4n-19w is digging at 1223 ft.

San Ardo Try Reams

Texas Co. is reaming with Lombardi No. 1 in Sec. 27-22s-10e in the San Ardo area, Monterey County, after cementing casing at 2133 ft. Drilled to a total depth of 2158 ft., the project reacted okay on trial of water shut off.

Cat Canyon Try Finishes

Union Oil is putting on the pump its McCroskey No. 2 in Sec. 20-9n-32w in the East Cat Canyon area. Total depth is 5560 ft., with casing set at 5519 ft. Wickenden No. 1-28 in Sec. 28-9n-32w in Olivera Canyon is making hole at 3564 ft. Mary C. Phelan No. 1 in Sec. 32-12n-34w has given up the search at 4297 ft. This is the company's third wildcat effort in the area in recent months to end up dry. Two other explorers were previously drilled on the adjoining Wineman property.

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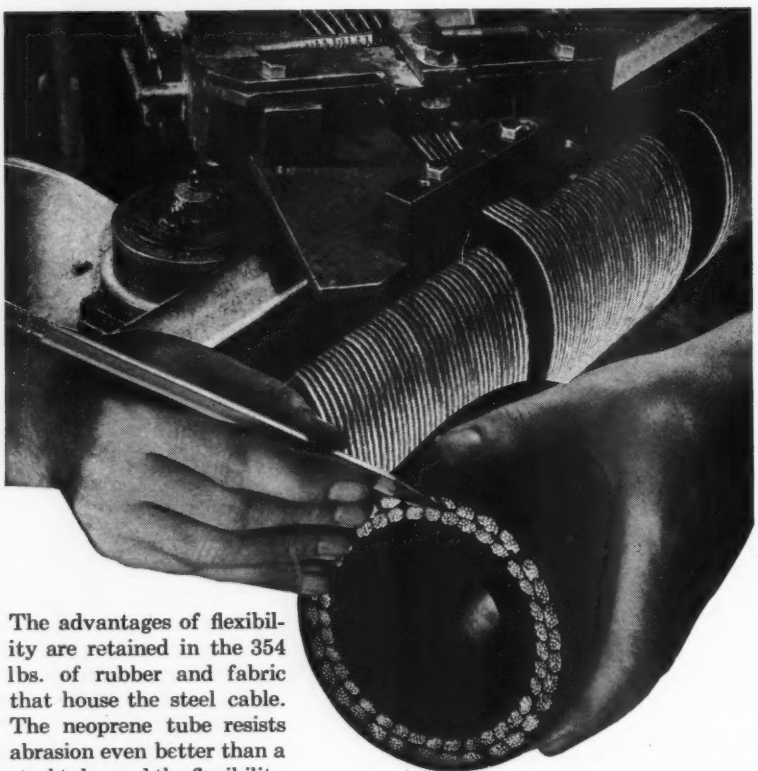

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Casmalia Drill Scene

Adams Oil's Morganti No. 4, a deep test in Sec. 13-9n-35w in the Casmalia area, is drilling below 4100 ft. Bell-Casmite Oil's Righetti No. 1 is making progress with the drill at 999 ft.

Montalvo Developing

Standard of California's Maxwell No. 1 in Sec. 32-2n-23w northeast of the McGrath discovery well in the Montalvo area is drilling and spot coring at 14,395 ft. McGrath No. 65-3 in Sec. 30-2n-22w is redrilling at 9772 ft. Texas Co. is drilling and coring at 10,329 ft. with J. V. No. 1 in Sec. 24. Richfield Oil has perforated the interval of 9563-9610 ft. in its Del Cielo No. 1 in Sec. 30. Total depth is 10,400 ft., with pipe cemented at 10,033 ft. Lloyd Corp.'s B. K. No. 1 in Sec. 23-2n-23w is still a location.

Marin County Test Has Shows

Shows were encountered at 1750 and 2250 ft. in L. M. Lockhart's Tevis No. 1 wildcat in Sec. 7-1n-8w in the Bolinas area of Marin County. Drilling at last reports had gone beyond the 3400-foot mark. Locations falls about 40 miles from San Francisco.

Elwood Test Drilling On

Northwest of the intersection of the Southern Pacific right-of-way and east line of the Elwood Ranch and north of the Elwood field, J. W. Rice and Leonard Firestone are drilling at 597 ft. with Elwood-Doty No. 1 in Sec. 11-4n-29w, Santa Barbara County.

Oxnard Try Rigs Derrick

Signal Petroleum is rigging heavier equipment on its Schumate No. 1 wildcat in Sec. 28-2n-21w in the Oxnard area. Present depth is 2725 ft., with casing set at 2260 ft. Near by in the Camarillo Hills, J. W. Sorrels of Fort Worth, Tex., has purchased from Janss Investment Co., approximately 3200 acres in the area for a prospecting campaign.

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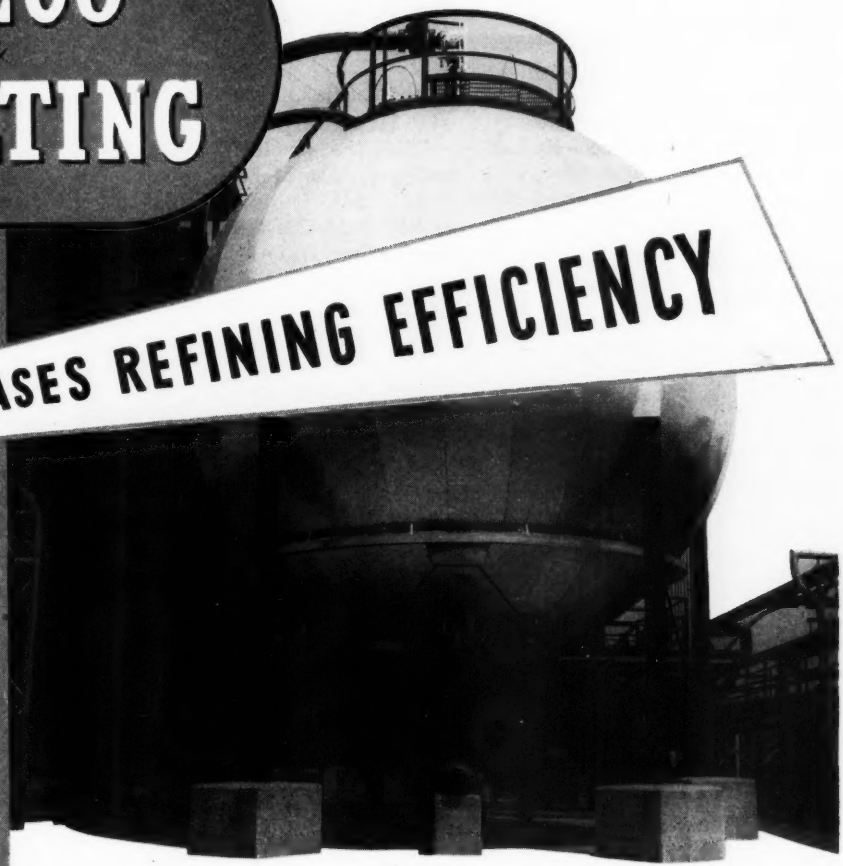

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Strand Test Grades Ground

South of the Strand field, Beloil Corp., Ltd., is grading ground for its KCL-B No. A-1 in Sec. 18-30s-26e. It is a short distance southeast of Tide Water Associated's KCL-E No. 58-7 in Sec. 7, which was completed at 8600 feet three years ago as a pumper.

San Emigdio Job Suspends

Bailed dry and evidencing no fluid entry, Apex Petroleum's Los Lobos No. 1 in Sec. 5-10n-22w in the San Emigdio area has suspended operations. Old bottom is 3505 ft. and redrilled depth 1638 ft. It was plugged back to 690 ft. for a test of the upper portion of the hole. The 7-in. was cemented at 710 ft.

Belridge Try Cores

E. A. Parkford is coring at 1750 ft. with No. 12-1 test in Sec. 12-29s-21e in the South Belridge area. An Etchegoin test, the project probably will go to a depth approximating 2000 ft. A moderate gas show was noted near 1600 ft.

Sharktooth Try Gives Up

With the Vedder evidently gray and wet, Barnsdall Oil has abandoned at 3435 ft. its Bosworth No. 1 in Sec. 8-28s-28e in the Sharktooth area of San Joaquin Valley.

Fruitvale Try Starts

LeBow-McNee Oil Co. has staked location for an extension test of the Fruitvale field. If successful the venture will extend production one location to the south. It will drill on a 300-acre lease in Sec. 34-29s-27e.

McDonald Job Idle

Henry E. Dawson's Twisselman No. 1 wildcat in Sec. 14-28s-19e in the McDonald Anticline area is idle at 1532 ft.

Cellar In For Arvin Wildcat

Near the Arvin field, discovered by General Petroleum in 1939, British-American Oil Prod. Co. and the Capital Co. have cellar in for their Arvin Comm. No. A-47 in Sec. 26-31s-29e. Pacific Western's P. H. Greer No. 53 in Sec. 9-31s-29e is prospecting at 6998 ft.

Kern Bluff Developing

Oceanic Oil and Universal Consolidated's development campaign at Kern Bluff continues to move ahead successfully.

The combination's Needham-Bloemer No. 14 in Sec. 7-29s-29e is in oil sand at 990 ft., top of which was placed at 883 ft. Water shut off was effective on casing cemented at 830 ft. No. 16 has been put on the pump for 60 barrels of 15.6 gravity oil a day, cutting 1 per cent. Total depth is 890 ft., with the Main oil sand topped at 797 ft. No. 1 and No. 27 are locations in the section.

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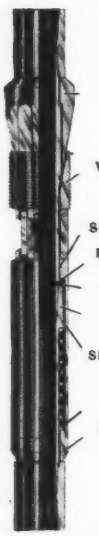

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Williams Well Starts Drilling

F. W. Williams' exploratory venture, Williams No. 1, in Sec. 5-28s-20e in the Williams area of Kern County has been spudded in and at last reports was making rapid time through surface formations.

Race Track Well Flows

General Petroleum's Cooney No. 78-24 in Sec. 24-29s-29e in the Race Track field has been shut in, after finishing at a plugged back depth of 4679 ft., flowing 228,000 cubic ft. of gas daily. The yield evidently carries a heavy percentage of gasoline. Original bottom was 4925 feet. Charles No. 33-34 in the section is drilling ahead in the shallower formations.

San Emigdio Test Drills

Having successfully recovered drill pipe fish, Continental Oil is drilling ahead at 11,300 ft. with its KCL No. L-2 in Sec. 8-11n-21w in the San Emigdio area. Santiago No. 1 in the section is rigging up.

Ant Hill Try Drills

In the vicinity of the Ant Hill field, opened up by Amerada Petroleum three years ago, General Petroleum is drilling below 3000 ft., with its Cottonwood No. 68-24 in Sec. 24-29s-29e.

Comanche Point Project Pumping

Gene Reid Exploration's Gould No. 1 in Sec. 32-12n-18w in the Comanche Point area has been finished at a plugged depth of 640 ft. pumping 30 barrels of 13 gravity oil daily, cutting 70 per cent. Formerly operated under the name of L. C. Gould, the try went to a total depth of 1592 ft. and hit weathered granite at 1505 ft. In Sec. 25-12n-19w, Richfield Oil is about to spud S. P. No. 10.

Earlimart Test Drills

In the Earlimart area of Tulare County, Pacific Western is drilling at 6425 ft. with its deep test in Sec. 16-24s-25e. It is called Brunner No. B-1.

Cymric Area Still Active

Independent Exploration is ready to run casing in its Cymric No. 23 in Sec. 21-29s-21e in the Cymric area, following check with electric log. Hole is bottomed in the Oceanic at 4900 ft. Schlumberger has been run in the company's McDonald-Purdy No. 81-28 in Sec. 28-29s-21e, with the project now idle. Heavier equipment will be moved in.

Superior Oil's Anderson No. 1 in Sec. 20 is standing cemented with casing set at 2970 ft. Total depth is 2980 ft. Harry H. Magee, Operator, has reached 4533 ft. with Bolton No. 7 in Sec. 22. Brown shale was topped at 4188 ft.

Mount Poso Wildcat Scene

North of the Mount Poso field, J. H. Maurer and Arthur C. Fisher have staked location for an exploratory venture in Sec. 15-26s-28e. Their Linda No. 3 in Sec. 2-29s-29e in the Ant Hill area has reached 900 ft., with cores being taken at 20-foot intervals.

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McKittrick Venture Digs

General Petroleum is making hole ahead at 2850 ft. with Ninkovitch No. 1 wildcat in Sec. 9-30s-21e in the McKittrick area. Pacific Western, meanwhile, is continuing to test uphole at intervals above plug at 6000 ft. in its Rankin No. 85-30 in Sec. 30-30s-22e. Pacific Western is grading for No. A-63-30 and No. A-83-30 in the section.

Texas Co. has completed Tulare NCT One No. 17-28 in Sec. 28-30s-22e at 6536 ft. for 126 barrels of oil a day. Westpet NCT Two No. 14-29 in Sec. 29 is down 1583 ft.

Pioneer Test Digs

Western Gulf is digging in sandy shale at 5423 ft. with B. & M.-U. S. No. 1 in Sec. 30-11n-23w on the Pioneer Anticline in Kern County.

Kettleman Hills Duo Drill Ahead

Standard is redrilling at 11,460 ft. with its No. 73-30V in the Middle Dome wildcat district of Kettleman Hills. It is in Sec. 30-23s-19e. The original hole went to 12,389 ft. before running into a fishing job. On the present redrill job, the company is making slow time to avoid possible mishaps. S. F. & F. L. No. 4-2 in Sec. 12-25s-19e is drilling below 7100 ft.

Coalinga Test Changing Pipe

Drill pipe is being changed in Sharples Oil Corp.'s Lillis No. 88-18 test in Sec. 18-18s-15e in the Northeast Coalinga area, Fresno County. Fleishacker No. 85-1a is preparing to drill ahead after drilling out cement plug. Casing is set on bottom at 8144 ft. Location falls in Sec. 1-19s-15e.

Bacon Hills Well Deeper

Drilling in sand and shale at 3705 ft. is the present status of Seaboard Oil's No. 26-21 in Sec. 21-28s-20e in the Bacon Hills area.

Cat Canyon Venture Digs

General Petroleum has carried its Realty No. 73-10 test in Sec. 10-9n-33w in the Cat Canyon area to 5542 ft. and continues to prospect ahead. In the field proper, Douglas Oil is ready to give the finishing touches to Los Flores No. 5 at 6240 ft. Casing is set at 5635 ft.

Coastal Failures

In the Orella area of Santa Barbara County, Shell Oil has abandoned its Careaga No. 2-1 in Sec. 36-5n-31w. The hole went first to 1763 ft., before plugging back to 600 ft. In the Guadalupe area in San Luis Obispo County, Sand Dune Oil Co. has pulled out of its LeRoy No. 1 in Sec. 3-10n-36w.

Ojai Well Rigs Pump

After being completed at 4028 ft. for a substantial flow, Richfield Oil's Ojai No. 49 in Sec. 13-4n-22w. Pump is now in the course of installation. Casing was cemented at 2476 ft.

Saticoy Try Deep

Drilling is going ahead below 10,100 ft. in Superior Oil's Saticoy No. 1 in Sec. 10-2n-22w in the Saticoy area, Ventura County.

Zaca Test Grades Site

Location is being graded for Tide Water Associated's Chamberlin No. 54 in Sec. 31-8n-33w in the Zaca area, Santa Barbara County. The drill site is about 660 ft. south of the company's Luton No. 71 on the Davis lease in Sec. 34-8n-31w, which suspended operations last May, after going to 4033 ft. and redrilling to 3836 ft.

Maine Prairie Wildcat Drills

In the Maine Prairie area of Solano County, Amerada Petroleum is prospecting ahead at 4159 ft. in sand and shale with Crocker Estate No. A-2 in Sec. 23-6n-2e.

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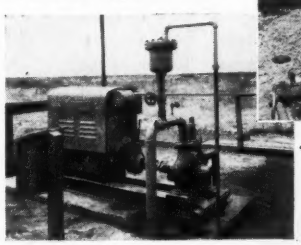
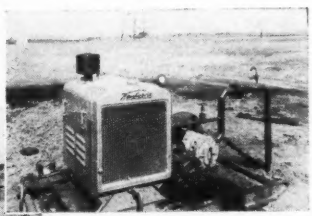
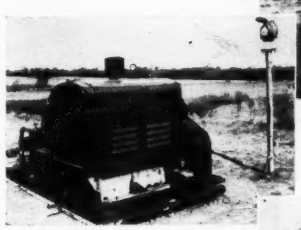
The Texas Co., uses Model FC Waukesha Engine to drive gathering pump at Paul's Valley, Oklahoma.

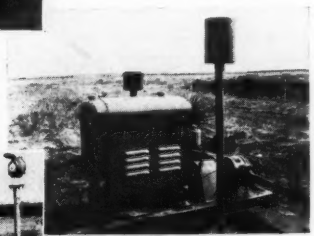




Humble Oil Co., in Ector Co., Texas, uses Model XAH Waukesha Engine to drive pipe line gathering pump.

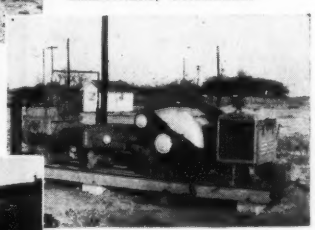
Gulf Pipe Line Co., Eunice, N. M., uses Model FC Waukesha Engine to drive rotary gathering pump.





Mid-Continent Pipe Line Co. uses Model XAH Waukesha Engine to drive pipe line gathering pump at Holdenville, Oklahoma.

High pressure pipe line pump driven by Model XAH Waukesha Engine, used by Mid-Continent Pipe Line Co., at Moore, Oklahoma.



Model GAK Waukesha Engine drives high pressure pipe line pump for Mid-Continent Pipe Line Co. at Moore, Okla.

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(Continued from Page 6)

pumped at a slow rate of speed to prevent sucker rod fatigue.

The Continental wells make no sand, and cuts are very low. There have been no casing failures, and very few wells have had to be pulled.

Oil from the Ranger Zone is from 14° to 17° gravity. One well flowed for a year, and another for several months, with the aid of a packer before being placed on the tubing. Gas pressures of the Ranger Zone are not sufficient to freely lift this heavy oil for any period of time.

Plans for longer and higher angle holes are being made. The new Continental wells will undoubtedly add more unusual feats to their directional drilling record. Wells up to 80° angles now appear to be only slightly more than the accustomed routine to Continental.

To date some 35 wells of over 60° angle have been drilled under this program. The longest well is Continental Southern Community #113 which has reached out horizontally a distance of 4,250′ while attaining a vertical distance of only 3,400′. By maintaining the angle successfully reached in Community #116, a horizontal section of over 5,000′ will easily be reached in the Ranger Zone.

An important feature of the drilling appears in the average cost of the wells. High angle whip stock drilling has been an expedient rather than a general program in most operations, and it has been approached with trepidation and costs have been relatively high. The average cost of all of the high angle holes drilled by Continental has been approximately $50,000.00 each. A splendid example of low cost drilling is shown by Continental Community No. 120. The well has a drill depth of 4,550′ and an angle of 60′ 45″, yet it was completed with clean oil into the tanks in one hour less than 18 days.

Two years ago when New first made public his plans for this ambitious program for the Continental companies, it occasioned considerable shaking of heads in the industry. It was a "first" and heading into unknown difficulties. Today the same kind of program is being undertaken in the east end of Long Beach by Robert Lytle for the Doheny interests, and the north flank of Signal Hill by the Shell Oil Company and the Hancock Oil Company. In the light of current shortage of petroleum, this step to overcome the tendencies of governmental agencies to close many areas to surface operations has become a valuable adjunct to the oil industry.

P.P.P. Annual Meeting December 13th

The Petroleum Production Pioneers will hold their annual Year End Roundup at the Los Angeles Breakfast Club, 3201 Los Feliz Boulevard, Los Angeles, on Saturday, December 13, 1947. The festivities will begin at 5 p.m. with dinner being served at 7 p.m. This is the last meeting of the year prior to the election of new officers. Arrangements are under the direction of Ox Morgan with Larry Coker pinch hitting in his absence.

The organization headed by J. E. Gosline, Standard Oil Company of California still continues to grow at a phenomenal rate — the present membership is crowding 800, with over 600 who have seen more than 30 years of service in the drilling and production phases of the petroleum industry.

Superior Engine

(Continued from Page 12)

the spark-ignition gas engine. At full load the saving amounts to 25 percent for dual-fuel.

The dual-fuel engine is even more economical than the straight diesel at loads greater than 75 percent of full load, and at full load this saving amounts to about 17 percent. It is interesting from a technical point of view that the relatively high percentage of pilot oil results in better economy than when minimum pilot fuel is used under controlled conditions. The comparison of exhaust temperatures in Fig. 5 is also significant.

Dominguez Test Drills

Union Oil's Callender No. 98-A, a deep test in Sec. 32-3s-13w in the Dominguez field, is continuing to drill ahead at 9976 ft. Hellman No. 48 is drilling at 6580 ft.

Union Oil Co.'s Well No. 98A Callender at Dominguez, Calif. Left to right: J. D. Frazier, Derrick; "Vic" Wanee, Field Operator; K. J. Mullen, Rotary; R. L. Toney, Rotary; Don McPherson, Rotary; B. W. Messer, Driller; and Jim Crump, Derrick. Santa Fe Drlg. Co. is drilling contractor.